The Builder.

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THE current number of the *Westminster Review* is disfigured by a very ill-natured article on the new Houses of Parliament,—an article wholly devoid of that high and generous feeling which, even while pointing out errors or shortcomings, ought to be exhibited towards the most extensive, arduous, and finest work of our own time,—and appears to have little other purpose besides finding fault, and so gratifying what would really seem to be a personal or party pique. The ground of this inference, which the very excellent conductor of the Review in question will probably think derogatory to the character of his journal, is the following, and appears to us irrefragable. We could perfectly understand, and perhaps admit the force of, many objections, which might be raised by one who passed over the building alternately praising and deploring, and might even admit as possible, good faith, impartial judgment, and absence of bias, in one who saw more to find fault with than to praise, however much we might differ with him;—but when a critic, in commenting on the work to the extent of about fifteen pages of letter-press (the remainder of the article relates to other structures—the British Museum, Buckingham Palace, and the Royal Exchange), finds fault page after page, without discovering *anything* to admire—without a single word of applause and encouragement, or the slightest admission of ability displayed in this elaborate, and, in many respects, novel structure, the pains whereof to its architect none but an architect can rightly estimate,—the candid mind cannot believe in his impartiality, and is led to suspect the predominance of personal feelings throughout.

The main objections which the writer urges are excessive decoration and want of height:—

"So unaccountable, indeed," he says, "has been the inattention to this latter quality, that it almost seems as if the architect had been able to waste it and give it away, since the level of the basement-moulding, from not having been properly attended to, appears likely, as it proceeds westward from the clock-tower towards Parliament-street, there to lose itself in the ground, from the rise of the earth, or to run so close to it as to be deprived of its just effect. If this is so, it is unaccountable. The ground-line should have been the same as that of Westminster Abbey, or Canning's statue. The suggestion was made to Mr. Barry. The objection that the level of Westminster Hall was too low was anticipated; it was proposed to raise the Hall (it is 8 feet below the base of the statue). Had this been done, the building, instead of being now sunk, as in a well, by the side of Westminster-bridge, would have been nearly on a level with the ground at the foot of it. A few hundred thousand extra cubic feet that might have been required for raising the basement some 3 or 4 feet would have been but a trifling addition to the cost of the whole building, in order to confer upon it that importance which it wants, and which is now sought to be attained by raising the towers beyond their original intention."

The statements here made are not all correct, and the general inference is altogether an unfair one. The defect in apparent height belongs to the site, and not to the building, which is higher than most modern edifices,—practically, indeed, too high, as those who have to attend parliamentary committees know to their cost. The base-moulding of the south elevation will be 6 feet above the ground when the levels of the adjoining streets are altered as intended,—it is at present 4 feet.

It was suggested to Mr. Barry, the writer says, that the ground-line should have been the same as that of Westminster Abbey or Canning's statue; but, as the writer probably knows, Mr. Barry had no power to avail himself of the suggestion. Cost had to be considered. If the ground-line had been raised 8 feet as here suggested, it would have added at least 150,000*l.* to the expenditure, and the building would still have been 12 feet below the roadway of the bridge at the foot of it, and not on a level with it, as the writer says. The ground-line, moreover, of Canning's statue is but *five* feet above the level of Westminster Hall, not 8 feet, as stated, which would have made the advantage even less.

Nothing short of an extra elevation of 14 or 16 feet would suffice to obviate the defect caused by the bridge, if the bridge is to be allowed to remain as it is, as is proved by the reviewer himself, when he says, that even now that the roadway has been lowered several feet "an omnibus passenger will discover the Serjeant-at-arms at breakfast on the first floor."

"The original design," continues the objector, "was calculated for five acres of ground, but the wants of the state, or rather the pretensions of those who serve it in waiting upon the legislature, and the aspiration of the architect, extended it, though in a horizontal direction only, so as to cover two more acres with masonry, but without any corresponding addition to the elevation. What might have been a fair proportion for five is not suitable for seven, but this reflection does not seem to have occurred in time. However, the towers are to produce great effect; we are told to wait, and see when they shall have arrived at their height how they will rescue the rest of the mass from its comparative humility. This is doubtful." To us it seems not doubtful at all: they cannot fail to carry upward the whole mass. As respects the enlargement of the site, one effect was to place the building further from the bridge. The principal front was but little increased in length, and an additional height *was* given to the building in consequence. To talk of raising the whole mass in proportion to the extension of area covered is nonsensical. The reviewer very unfairly compares the structure in respect of height with the Abbey—a building of different style—ecclesiastical instead of domestic, and, moreover, one of the loftiest edifices, even of its own kind, that we have. Practically, as we said before, the Houses of Parliament are already too high: the defect is in the site, and even here it will be greatly lessened when the bridge is rebuilt, the neighbouring levels altered, as proposed, and the elevated portions of the building carried up to their full extent.

In speaking of the excess of ornament on the exterior, the writer laments that the architect should not have understood that the value of all ornament, whether in architecture or in dress, depends much upon its being set off by some plain smooth space. "What a source of beauty," says he, and with truth, "results from the exemplification of this principle in the buildings and attire of classical antiquity. How the plain repose and shade of the cella in the temple set off the flutings and capitals of the columns that surround it; how the quiet architrave in the Doric brings out the richness of the sculptured frieze above. [Though, by-the-way, when the former was painted, and hung with shields, as was the case in the best examples, the illustration disappears.] Later, how impressive is the sparing ornament of the Norman style on the massive solids, surmounted by its strings and cornices, or pierced by its deeply-recessed apertures!" The palaces of Rome, too, he urges, derive almost the whole of their success from the contrast of the mouldings and decorations with the unbroken area. But what, after all, is this but saying that the Greek style of architecture, or the Norman style, or the Italian style, is not the Late Pointed style? The excess of ornament objected to, the universal panelling, and the absence of plain surfaces, are the very characteristics of the style and exemplars used, and the adoption of which, as the reviewer afterwards says, he perfectly approves of. The new houses are no rivals in this respect with Henry VII.'s chapel; the panelling is much larger, the carved ornaments are fewer than in that instance; and if we compare it with those to which it even more closely assimilates, the foreign Hotels de Ville (Ghent, Louvain, and others, at once occur to us), the same may be said with equal truth.

The position of the Victoria tower, at its further extremity, he considers "now irretrievably wrong," situated as it is, "at what is, and always must continue to be [there is no *must* in the case], the most remote corner of it." The fact is, the position of the tower was dictated by the plan adopted by Mr. Barry, and is a question of judgment, to the soundness of which we must suppose the Commissioners subscribed when they adopted Mr. Barry's plan rather than others which were submitted to them. There can be no doubt, too, that it was of the utmost consequence to the effect to be hereafter produced, to mark the extent of the building at this end, admitting it to remain the most remote corner, by a tower: further, it will be more striking than in a central position as being seen in its entire height. The writer flippantly observes that the tower appears "*stans pede in uno*, doing an eternal sort of goose-step at one end of the building;—the blue sky seen corner-wise through the huge arch, which seems to lead to nothing, making it appear almost like the portal of heaven to the pilgrim on his way to a place most unlike that cœrulean region—the Nine Elms terminus of the South-Western Railway!" And again, "the mass now, with the huge height in the rear and the smaller towers in the north and centre, is something like a vessel under jury, main and foremasts, with a disproportioned mizen: a highly ornamented Bucentaur, with a standard pole erected in the stern!" The *animus* of a reviewer who, in speaking of this great work, can use such far-fetched, flippant, and childish comparisons is somewhat obvious. Mr. Barry in this grand structure has achieved as much as could be expected from any living architect, at home or abroad,—we ought perhaps to say more; and in the name of English art and English artists, we do strenuously protest against such a derogatory and contemptuous mode of dealing with such a work.

The reviewer does not join in the vulgar cry of delay, raised in the House of Commons by persons avowedly profoundly ignorant of art and its processes, to the extent of those gentle-

men's assertions, but it would not do to lose the opportunity altogether, and therefore he denies the claims for rapidity of execution, which we and others have set up for the architect in reply to that cry: points out how many appliances of modern science and machinery were at command, omits all mention of causes of delay over which the architect had no control, and winds up with the remark that it "is not, after all, any extraordinary performance." We will simply put our word against the reviewer's, and we assert, as we have before done, that it *is* an extraordinary performance, and there stands the building to justify us. He then proceeds to point out sundry contemplated objectionable arrangements, which were prevented by "the able remonstrances and observations" of Lord Sudeley.* "In the midst of the Victoria Tower was to have been a central pillar, as a sort of pivot for the state coach, with its eight prancing horses to whirl round; then when this was abandoned as inexpedient, a gateway was provided for the admission of the royal equipages, but so narrow, that there were not six inches on each side of the wheels to allow for a swerve of the quadrupeds, or for the passage of the attendants who on that occasion accompany the procession on foot." And then her Majesty, on alighting, was to ascend twenty-five steps in a flight, without rest or landing place. The writer forgets to say that the proposed diameter of the tower was 70 feet when the central pillar was contemplated, instead of what it now is. And no one would fancy that the gateway for the royal equipages and foot attendants which he alludes to, is merely for the carriage to draw off into an inner court, to wait until wanted. As to the steps, they may or may not have been ill-considered: but there are many Italian precedents for a greater number of steps in a flight than are here mentioned. The propriety of the arrangement would of course greatly depend upon the rise and tread of the steps, of which, for want of knowledge, we can say nothing.

According to our critic, "the only parties who have really been attended to, seem to have been the officials of either chamber, for whom the architect has obligingly provided, at the public expense, dwelling-houses and dining-rooms rivalling the magnificence of Belgrave-square." The force of this remark is shewn by the fact that, within two or three days after its publication, another class of objectors in the House of Commons, inquired why certain alterations were being made, and were informed that it was in consequence of the *want of sufficient accommodation for the officers of the house.*

"Of so much of the interior as is completed," says the reviewer, "it is impossible to speak without a *certain* degree of disapprobation." Most candid and considerate critic! One might imagine, from the tone of the expression, that the whole of the preceding observations had been devoted to the extolment of beauties, and that at last the writer found it necessary to qualify his too ardent praise by the expression of "a certain degree of disapprobation." The interior, he says, has been committed, it is believed, by Mr. Barry to Mr. Pugin. No such thing is believed. As we have said several times, the whole of the internal decorations are executed from the sketches and directions of Mr. Barry: Mr. Pugin only operates with Mr. B. in carrying out his ideas. In a letter which Mr. Pugin addressed to us in 1845, soon after his appointment, he says, first stating what his province is,—"In fulfilling the duties of my office, I do not do anything whatever on my own responsibility; all models and working drawings being prepared from Mr. Barry's designs, and submitted to him for his approval or alteration previous to their being carried into effect. In fine, my occupation is simply to assist in carrying out practically Mr. Barry's own designs and views in all respects."* It is only just to Mr. Pugin to say, therefore, that while Mr. Barry is entitled to all the praise which is due to a successful result, he also is alone responsible for defects which may be justly complained of.

These defects in a candid mind will weigh little put beside the many beauties and merits of the design, the simplicity and excellence of the plan, the goodness of the details, the artistic power shewn in the decorations, and the scientific skill and variety of resources exhibited in the construction.

* The article savours strongly throughout of what may be termed the Sudeley faction.

DESCRIPTION OF A BUILDING ERECTED IN QUEEN-STREET, GLASGOW.

It has occurred to me, that were architects in the habit of writing descriptions of the buildings they erected, especially when circumstances influenced in any peculiar manner the design or arrangement, or their own ideas had taken any peculiar bent; and were such *notanda* to be permanently recorded in a journal like THE BUILDER, a mass of precedents would be accumulated which would prove of much use to the profession; and, if the practice were general, would reward those who took the pains to do so, and who thus gave away the results of their experience. Sir John Soane published his works; as, also, did Mr. Foulstone, of Plymouth; and there may be other instances, which I do not at present recollect, of architects who have put into a useful form, not the designs merely, but the practical particulars, of their executed works: it has been urged, too, how useful publications such as these would be; but, I think, if the authors were to bring forward these precedents at their own proper junctures, all the greater would be their utility and interest; for the latter, at least, is often as much dependent on the circumstances of time as on those of place.

It was under impressions such as these, that I threw together some memoranda of a building, for mercantile purposes, I have just completed in Glasgow, for James Lumsden, Esq., of Yoker, the late Lord Provost; and which, with an outline of the elevation, and some constructive details, I beg to subjoin.

The elevation is that of the front to Queen-street, the gateway in centre leading into Canada-court.

Fig 2 is a transverse section of the roof.

A leading innovation in this building consists in the use of two colours of stone: the principal, *white*, for shop-piers, entire first story over shops, architraves and other window-dressings, rusticatations, cornices, strings, parapet, and chimney-shafts; and the other *red*, for the walling of the two upper stories. London readers will readily understand the effect produced, seeing the number of buildings having a similar appearance, which have been erected in the metropolis of late years, having red-brick walling, and stone, or imitation stone, dressings: in the present case, the whole being rubbed-ashlar masonry, the courses in the red portion range with those of the white, and the former is of a less fiery hue than red brick. The thing has been questioned here, by some unused to such polychromic combinations; and the idea being first proposed and then deprecated, of imitating, in a country rich in stone, the practice of a locality where brick, of necessity, takes its place; without its ever occurring that, in London, in order to produce the effect desired by the artist, instead of the ordinary saffron-coloured stock-bricks being used in similar cases, additional expense and trouble are gone to to employ the red bricks, by which a pleasing contrast is to be obtained. The object sought in employing the red stone was, of course, to enhance the effect of the white, and give greater relief to the moulded-work.*

Mr. Edward Richardson made lately, in THE BUILDER,† some remarks on contrasts in stone, which contained sentiments exactly corresponding to my own notions on the subject.

The fire-clay of the Garnkirk works, near Glasgow, I gladly made available for the panels of honeysuckle ornament under the first floor windows, and the trusses supporting balconies, shop cornice, &c., by which means a much greater degree of durability is secured for the small carvings than would be obtained in free-stone. In the metropolis, some time back, terra-cotta ornaments were a good deal employed, though not to the extent to which they might be with advantage. The use of this material for exterior ornamentation is of ancient date, for it was usual to introduce subjects executed in it within the pediments of the Roman temples; the quadrigæ, also, with which these are believed to have been surmounted, was, in the case of the temple of Jupiter Capitolinus, composed of the same. The reader will probably remember the medallions of the Roman emperors which are inserted in the walls of Wolsey's portion of Hampton Court Palace: these bear testimony to the enduring nature of terra-cotta, and suggest that, had they been of any other stone, and thus exposed to the vicissitudes of our climate, these beautiful works of art would not now present themselves in so perfect a condition.

In these times, when so much discussion arises touching the best forms of cast-iron beams, it may be worth mentioning that I was afforded, through the agency of the destructive element which rendered these works necessary, an ample opportunity for adapting broken pillars to lintelling purposes; and, with the aid of new templates — square outside and curved within — to form solid end-bearings: very good lintels they made: two of them, 6 inches in diameter, over an 8-feet opening in a 2-feet stone wall, made a very satisfactory support to a very considerable superincumbent weight. Where cast-iron beams of considerable span were necessary, I had occasion to introduce a wrought-iron rod, with forked ends, let into the underside of the beam, secured at each end with dowels of wrought-iron let down through the bottom flange of the beam into the masonry on which it rests. In introducing these rods, I was actuated by the consideration that, in mercantile warehouses, there are not only very weighty loads to be borne, but, occasionally, severe concussive forces to resist; and that, as a precautionary provision, they would be efficient, in the event of a beam being suddenly broken, in preventing the serious consequences which would ensue from its fall. In other cases, where the span was not so great, I adopted a mode which has lately obtained here, wherein a rolled plate of malleable iron is introduced between two flitches of timber, and the whole well bolted together: the beams I employed were to a span of about 26 feet: the timbers were 13 inches by 6 inches each, the iron the full length by the full depth, and half an inch thick. This combination appears to me to make a very satisfactory beam,—the iron giving *strength*, and the wood contributing, besides its strength, the *stiffness*. With this compound beam there are not the same grounds for hesitation in regard to mortising for floor joists as with a beam consisting solely of timber, since its main strength does not lie in the portion to be cut.

In the sunk basement, and under part of Canada-court, there is a rather extensive vaultage, in forming which I had occasion to use a considerable number of cast-iron columns. These columns I made of the + in preference to the O section, notwithstanding Mr. Hodgkinson's having satisfactorily shewn that "the strength of a pillar formed like the connecting-rod of a steam-engine, compared to that of one containing the same metal, but formed of a uniform hollow, is but as 17,578 to 39,645;" for I had found that there was this serious risk attending the tubular form,

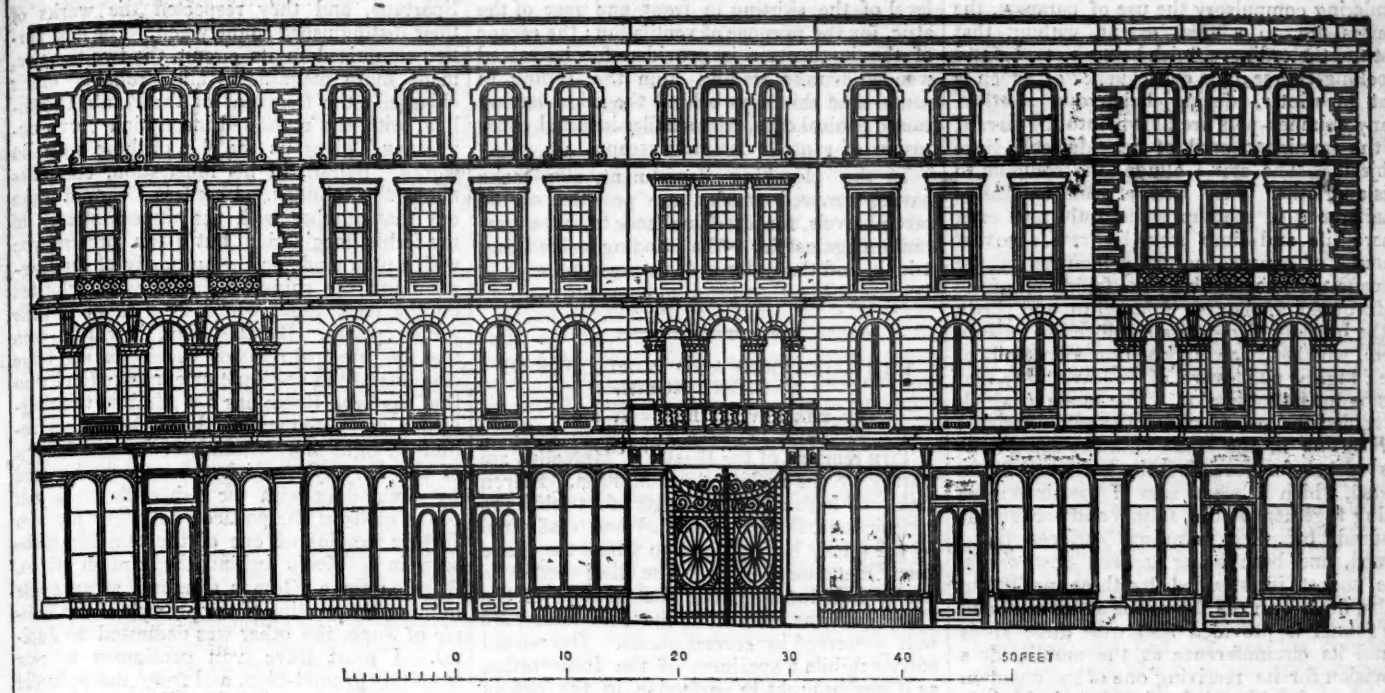
* See Vol. III., p. 426.

* A similar combination is presented in the new City Schools at Bristol, and with good effect.—ED.

† *Vide* p. 319, *ante*.

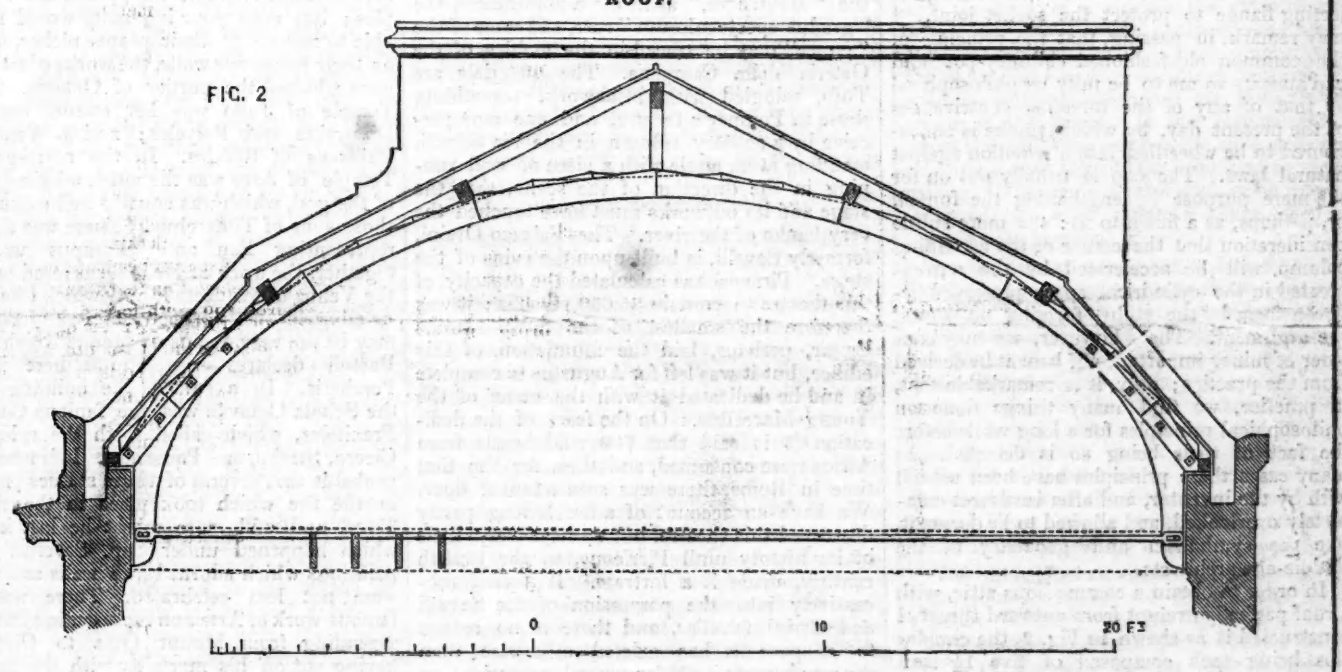
STREET ARCHITECTURE.—ELEVATION OF BUILDING ERECTED IN QUEEN-STREET, GLASGOW.

MR. JAMES WYLSON, ARCHITECT.



ROOF.

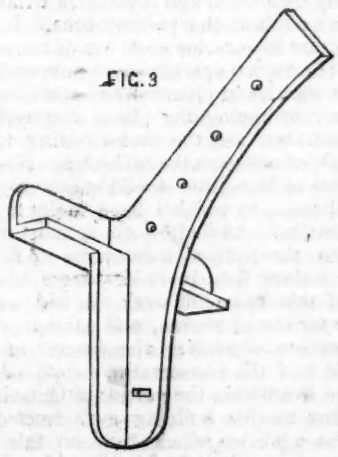
FIG. 2



that the core, in casting, might bend so much out of its proper concentric place in the mould, as to turn almost the entire substance of the metal to one side, and leave little more than a mere scale at the other. I had observed this in some of the broken columns already referred to, and on mentioning the subject lately to a founder, was told by him of a case wherein some of the iron columns of a large granary gave way, fortunately during the erection of the building, and thus led in time to a discovery of the nature of their deficiency: in this case the contractor was bound responsible for the stability of the building for a year after its completion; and there is no saying how disastrous might have been the result had these columns stood good until the building was heavily loaded with grain.

Having arranged for the vaults above-mentioned being paved with asphalte, which is a very disadvantageous material to have to break open to get at pipes or drains, I preserved the access to these, in their various ramifications, by means of stone curbs set in flush on either side, with flagging introduced between them. In regard to asphalte, it is known that much of the material used is nothing but coal tar; and as there are variations in quality, from that

FIG. 3



which softens with in-door warmth until casks and table feet make deep impressions in it, or under the influence of the summer sun becomes adhesive under-foot to the toiling pedestrian, to that other extreme which comes off in black dust, ready for conversion by moisture into a dirty mud, it appears to me that the cause of these opposing conditions lies in the under or over-boiling of the aforesaid coal-tar. We know that in preparing tar for use as a protective coating to wood-work, &c., it takes some three or four hours' boiling to "pitch" it; and that if it is too much boiled it loses its elastic quality, and becomes crusted and perfectly effete. Here appears the risk in regard to the so-called "asphalte;" what with the admixture with the other ingredients, the partial emptying of the boilers, and the cooling of the residue in them at the completion of one job, and the reheating, or making up, of the same at the commencement of another, the due amount of boiling seems liable not to be attended to. The blocks of "asphalte" which are prepared at manufactories for the purposes of paving, are generally too much impoverished: in the first place, a black varnish is obtained from the tar, which is used by boiler-makers and others; and the tar is then subjected to a process of distillation, in order to separate the spirit or naphtha; the residue is then boiled up again with an admixture of ground chalk, and formed into blocks, and this, as far as I am aware, completes its preparation as an article of commerce. It appears, therefore, that in using

the tar in its natural state as it comes from the gas-works, a less economical, but a much better article is employed, more liable to soften, but less liable to break and crumble away.

In Glasgow, where there is no Buildings' Act, rendering compulsory the use of parapets, the houses are, to a great extent, without that feature, the ordinary finish being a cornice and blocking-course; the consequence of which is that in winter, during boisterous weather, many chimney-pots are blown into the streets, to the imminent peril of her Majesty's liege subjects. The evil I allude to is common to this and other towns exempt from legislative interference in matters structural; and even where life and limb may be safe, the vast amount of expense annually incurred in the damage to roofs, partly by the falling off of the ill-favoured appliances referred to, and partly in the breakage by slaters employed to replace them, whether knowingly or unmeditated, is of itself highly suggestive of endeavours to find means for its mitigation. The mode in which I avoided the latter part of the evil, consisted in inserting in the stone chimney cap a cast-iron socket for receiving the lower end of the funnel, which I made also of cast-iron: the fitting together of the funnel and socket was ensured by their meeting surfaces being turned, and both being tapered downwards. The socket is steadied by three projecting stubs, flush with the top of the stone cap; and the funnel is provided also with three stubs round its circumference at the mouth, as a provision for its receiving one of the common clay caps, should such be found desirable. It is besides surrounded at the base, with a projecting flange to protect the socket joint. I may remark, in passing, that the principle of the common old-fashioned chimney-pot and cap appears to me to be fully as philosophical as that of any of the tortuous contrivances of the present day, by which smoke is endeavoured to be wheedled into a rebellion against natural laws. The cap is usually put on for the mere purpose of lengthening the funnel, or, perhaps, as a finish to it: the more subtle consideration that the course of the ascending column will be accelerated by the current created in the cylindrical space preserved between them by the stubs, forming no part of the argument. That, however, we may consider of minor importance, if benefit be derived from the practice; only, it is remarkable that, in practice, we find many things done on philosophical principles for a long while before the fact of their being so is detected. In many cases these principles have been set out with by the inventor, and afterwards get completely overlooked, and allowed to lie dormant, like the symbolism and geometry of the middle-age architects.

In order to obtain a commodious attic, with a roof perfectly exempt from outward thrust, I constructed it as shewn in Fig. 2, the circular ribs being each composed of five 1½ inch flitches, cut circular only on their under edge, and the abutting-joints breaking bond twice in each length: in each haunch of the arch, there is an iron casting which takes the place of a portion of the middle flitch, and, by an extension downwards, affords the means of tying the roof together under the floor-boarding; accompanying this, which may be considered the web of the casting, a level portion about 2½ feet long, serves as a template or bearing-plate for the arch ribs, and, turning up on the outer edge, furnishes also an abutment for the pole-plate—to resist any thrust in the common-rafters. A lateral return also of the lower portion of the web, on either side, giving it a T section in that part, tends further to give it stability and strength: the tie is of 1½ inch bolt-iron, forked at either end, and with an elongated eye in each prong, for receiving a pair of wedges, which pass through the web of the castings, and tighten the rods to their proper degree of tension. The arch-ribs are placed about 12 feet apart: at one end of the building there is a return wing at the back, which renders necessary a diagonal rib of a considerably larger span; this is formed of seven flitches. In the interior, the soffit of the ribs is lined with wood, beaded on the angles, and the sides plastered; the purlins also are cased in wrought and beaded lining: ceiling-joists are carried between the two centre purlins to carry the plaster lining across horizontally. Fig. 3 represents one of the haunch irons.

From a fourth to a third of the small apertures which appear like dots along the principal cornice in the elevation, are perforations about 3 inches in diameter through the wall, at the level of the skirting in front and rear of the attic, for the purpose of ventilation: the escape of the impure air is provided for by valved wooden trunks, leading from the ceiling to round zinc chimneys behind the ridge, having raised conical caps, with smaller inverted cones inside of same to facilitate escape.

In the plumbing department, stop-cocks having screwed nozzles, are provided on the several levels, for attaching hose to, as a precaution against fire,—the standing mains being 2-inch, and the water at high-pressure.

JAMES WYLSON.

THE THEATRES AND PORTICOES OF ANCIENT ROME.

BY THE REV. R. BURGESS, B.D.*

THE remains of the theatre of Marcellus are worthy of the architect's admiration. Eleven arches of both orders and part of a twelfth are conspicuous, though mutilated and disfigured by the dusky habitations into which they have been metamorphosed. The first order is nearly half interred, but the capitals of the Doric columns, as well as the entablature, are well preserved in several places. The second story exhibits a specimen of the Ionic order, as it was brought to perfection in the age of Augustus. Within those arches which formed the "ambulacra," as in the amphitheatre, the "gradus spectaculorum" rose, and some of the "cunei" may be traced in the stables of the Osteria della Campana. The materials are Tufo, mingled with brickwork, resembling those in Pompey's theatre, and one may perceive by a solitary column in the Via Savelli, standing at an angle with a piece of wall running in the direction of the scena, that the stage and its outworks must have touched the very banks of the river. The Palazzo Orsini, formerly Savelli, is built upon the ruins of the stage. Piranesi has calculated the capacity of this theatre to contain 25,000 persons; it was therefore the smallest of the three. Julius Cæsar, perhaps, laid the foundation of this edifice, but it was left for Augustus to complete it, and he dedicated it with the name of the Young Marcellus. On the feast of the dedication it is said that 700 wild beasts from Africa were consumed, and then, for the first time in Rome, there was seen a tamed tiger. We have an account of a fire having partly destroyed this theatre, but we hear very little of its history until Pierleone, in the twelfth century, made it a fortress. It passed successively into the possession of the Savelli and Orsini families, and there is no reason to suppose it has existed otherwise than it now presents itself for several centuries: in Carnucci's Antiquities, we have a drawing of it, bearing date 1565, and it is there exhibited just as we see it at the present time. I may mention that its exterior walls are of travertine stone. The 25,000 spectators are now replaced by some workers in charcoal and some mules, the former occupying the places reserved for the magistrates, and the mules having taken possession of what was the orchestra. Near to the theatre of Marcellus stood the famous portico of Octavia, to which I have finally to call your attention. And although we must penetrate into the filthiest habitations in Rome, among stinking fish, in order to see the remains of this splendid work, it will amply repay us for our excursion, and stamp indelibly upon our memories the flavour of the Pescheria and the conservative habits of the Jews who live within the portico of Octavia.

The first marble building ever erected at Rome was a portico which stood on this self same site. It was built by Metellus Macedonicus: two temples were comprised within it. The architects were two Spartans, whose names were Sauros and Batrachus. They not only contributed their skill, but, as they were rich men, they employed their wealth also in the undertaking. The only reward for their services which they asked of the Romans was that their names might be mentioned in an inscription on the temples; but this honour being refused, they contrived to introduce their names allegorically: Sauros meaning a lizard, and Batrachus a frog—those animals were introduced into the capitals of the columns. The architects of the portico of Octavia were also Spartans, and they respected the works of their distinguished countrymen. The new portico comprised in its circuit, the two temples, made more magnificent and probably much enlarged: the fragment of the Pianta Capitolina, with the mutilated inscription "CVS OCTAVIAE," gives us the plan of those splendid works. Bellori, in his illustration, computes about 270 columns. I confess I cannot make out that number with the utmost stretch of my feeble imagination, but I can present you with a plan made on the authority of the fragment and the ruins which still exist, adjusted on the dark tints, which shew them in their proper places. By this plan, it will be seen that the principal remains consist in six large columns of the vestibule or entrance (and who that has seen Rome has not admired the magnitude and elegance of those Corinthian columns), eight more columns of the exterior row of the Perystyle, which are only to be seen by contending with the fish-stalls made out of the spoils of the portico; and there are also further remains of one of the temples to be seen in a Vicolo behind the church of St. Angelo: three columns standing at an angle indicate the position of the prostyle of the Temple of Juno, the other was dedicated to Jupiter. I must leave you gentlemen to rear from this ground-plan, and from the splendid vestiges which remain, the elevations and architectural views of the portico and its temples; but even your ingenuity would not be able to restore to their proper niches, or affix on their respective walls, the works of art which once adorned the portico of Octavia. In the Temple of Juno was her statue, made by Dionysius and Polycles; and a Venus by Philiscus of Rhodes. In the corresponding Temple of Jove was the much admired statue of the god, which was equally well executed by those sons of Timarchus. There was a group representing Pan and Olympus wrestling together, the work of Heliodorus; and perhaps the Venus of exquisite beauty which Pliny tells us adorned this portico (the work of Phidias) may be the very Venus de Medici which Santo Bartoli declares was found here in the Pescheria. In a part of the building called the Schola Octaviæ was the famous Cupid of Praxiteles, which called forth the eulogia of Cicero, Strabo, and Pausanias. It is more than probable that several of those statues perished in the fire which took place in the reign of Titus, and still more might be lost in that which happened under Sep. Severus. The paintings which adorned the walls and vaults were not less celebrated. There was the famous work of Artemon representing Hercules ascending from Mount Oeta to Olympus, having put off his mortality with the consent of the gods; there was the painting by Antiphilus, where four figures of satyrs were grouped around the noble Hesion; and Alexander and Philip, with Minerva. You may exhibit to us an elevation restored; a few columns will direct you to complete the portico, and a medal will give you a finish for the pediment. You may square us off the basements, and crown the balustrade with colossal statues and urns; and you may festoon or tryglyph the entablature; but you cannot paint afresh the works of Artemon and Antiphilus, nor mould again the forms which the innate flash of the mind of a Phidias or a Praxiteles could produce. You must therefore be content with the bare recital, and inscribe upon the very best edifice I can describe, "*Stat nominis umbra.*" But you will remark in the enumeration of the names of those celebrated artists, that they were all foreigners, and Rome owed her most splendid works of art, I may say all of them, to the Greeks, and they owed much of their theatrical amusements to the Syrians and Egyptians. It is, in fact, a mistake to attempt to nationalise either art or science. If there be such a thing as communism in the world, it exists in the realms of genius, and no petty jealousy should ever attempt to exclude the foreigner who brings his originality of thought and genius to adorn a country of which he is not a native. It was written over the tomb of Ludlow, in Switzerland, "*Omne solum forti-*

* See p. 329, *ante*.

patria," and the same may be said of the man of true genius, he belongs to every country; and I should say it generally betrays a sense of inferiority wherever there is an attempt to exclude from fair competition the genius which comes from a foreign shore. The Romans did not this, even in the histrionic art; they excelled in gladiators, but they were inferior in sculpture, and painting, and architecture: by admitting foreigners they ended by taking the lead in architecture at least, and perhaps the studio of Emilius might have furnished a work worthy of the best Greek sculptor. And let me remark, that there are some things which no patriotism or spirit of nationality will accomplish. It will never make a man of taste admire an ordinary painting or an ungraceful statue; it will never reconcile him to a meagre elevation or an ill-designed public building.

I have generally attempted, in my papers which I have had the honour to read at the Institute, to shew the influence which the public institutions under consideration might have upon the character and destiny of the Romans; and perhaps there is much more connection than at first sight appears between the works of the architect and the national character of a people. The architect is called upon to create only those works which are suitable to the habits of the people, and his object should be to study to do these well; and I, for one, do not regret that he is now compelled to study the construction of churches and schools rather than that of theatres and porticoes. I am more than satisfied with the unarchitectural erections of Covent Garden and Drury-lane for theatres, and for porticoes and groves Vauxhall and the Surrey Zoological.

I am still compelled to speak only of the comparative innocence of our places of public resort; they are immeasurably inferior in architectural beauty, but they are a great improvement upon the moral aspect, and the restraints and the reflective influence of Christianity have even reached our public amusements. We cannot wonder at the indignation with which the early Christian writers viewed the theatres and places of public entertainment among the Romans, where every brutal passion or lascivious desire was gratified, and where vice in every form was enthroned by universal suffrage. We can excuse these holy men applying to these rendezvous of iniquity the title of "Devil's houses," for which I would hope no member of this Institute will ever have to give a plan. It is to my mind a happy circumstance that the "cavea" is now transferred to the lecture room, the orchestra transformed into an Exeter-hall platform, the stage to the floor of the House of Commons, where sometimes members offer to die, and the pulpitum to the place from which the people are instructed in the truths and duties of Christianity. You will excuse me, then, if I rather rejoice over the ground you have lost in modern times for the exercise of your beautiful art; and that *my* profession has so amply supplied, by the sacred edifice, the field that is gone from you in the profane. I rejoice, not because either you or I have a stage more or less for our exertion, but because I think that the best interests of mankind and the happiness of the human race are more likely to be promoted by a church than by a theatre; and if we compare the national tastes of two neighbouring and rival countries in this respect, we at least shall be satisfied with the results;—and although I am loath to end this paper with a sentiment that may sound harsh to some, I cannot but be of opinion, that as the influence of Christianity prevails, and sober-minded pursuits follow as a matter of course in its train, theatrical representations, except for children, will give place: meanwhile, whatever tends to purify our places of public resort, and make them really places of recreation, is a benefit conferred upon the morals of the rising generation.

SMALL-POX HOSPITAL COMPETITION.—Fifty-four sets of designs for the new Small-pox and Vaccination Hospital have been received, and are now under the consideration of two architects appointed by the committee, in pursuance of the printed regulations, to select five designs for the committee's choice. We understand that many of the designs are very good.

THE SECRETARYSHIP TO THE COMMISSION OF FINE-ARTS.

THE *Art-Journal*, with reference to the remarks we made some time ago on the contemplated appointment of an Italian gentleman to take Mr. Eastlake's place as secretary to the Fine-Arts' Commission, says, we "made the giant we desired to kill," and asserts, "on good authority," that the present secretary is *not* about to retire, and that the foreigner in question "has *not* been appointed by the commissioners to any office connected with the commission, nor is any such appointment contemplated. The secretary's occasional employment of the gentleman in question in *subordinate official matters* (our contemporary admits), may have given rise to the statement referred to—which is simply absurd."

Absurd or not, the appointment of this gentleman would have been more so, and worse: and so far from now having greater doubt about the truth of the rumour which led to our observations (and which we then put most guardedly), we are more strongly satisfied than ever of its truth, and that we did not speak a minute too soon.

More than one, two, or three correspondents, who give us their names and speak with authority, state positively that the Italian gentleman does at this moment receive a salary for the performance of some of the duties devolving on Mr. Eastlake as secretary to the commission, and that but for our protest, and the response it elicited in several very influential quarters, he would have been in a very short time virtually, if not in name, the secretary.

The *Athenæum* remarked, when quoting our objection, and earnestly backing it, that, "In certain high quarters the patronage of the continental artist in nearly all the departments of art has grown into an offence to English genius." This appointment would certainly have clinched it bravely. We have no reason to regret our part in the "absurdity," and do not intend leaving the stage till the piece is played out.

EXTENSION OF SOUTH-WESTERN RAILWAY TO WATERLOO BRIDGE.

ON Thursday, in last week, Captain Simmons, the Government inspector, made a careful survey of all the works composing the extension of the South-Western Line from Nine Elms to the York-road; on Friday following the Board of Trade authorised the opening, and on Tuesday this took place. The extension is on a viaduct formed by about 250 brick arches, averaging 20 feet high, and is two miles in length.* It has four lines of rails throughout. It is carried over the first road it crosses, that from Vauxhall to Lambeth, by an oblique iron bridge, about 60 feet span. After passing some intermediate streets, it reaches another road of some importance, the South Lambeth-road, which is crossed by a sheer iron bridge, with side arches. The line now bends round to avoid Vauxhall-gardens, and crosses the Vauxhall-road by another iron bridge, in a span of fifty feet. The line is again deflected to the east, by the palace of the Archbishop of Canterbury. Near this it crosses the ancient road called Lambeth Butts, by a small bridge, and the main road leading to Lambeth Palace and Church, by a very extensive sheer iron bridge of two arches, having a pier in the middle of the road. Proceeding eastward, the line crosses the national schools of the parish of Lambeth, which have been rebuilt at the cost of the company in the Tudor style of architecture, from a design of their architect, Mr. Tite. After crossing the Westminster Bridge-road by a sheer bridge of iron of one span, and Granby-street and York-street by an ingeniously built bridge, the terminus is at length attained. The bridge across the Westminster-road is in one span of ninety feet, and it is exceedingly oblique. The terminus is raised on a terrace of arching, and will have an area nearly square, and covering eleven acres of land. Eventually, this station is intended to have four distinct termini, with a façade of 600 feet towards the York-road. The length of the present iron-roofed platform is, we are informed, 300 feet, but when completed it will be 600 feet. Its full width is about 150 feet. The Nine Elms station will be converted into a locomotive depôt and workshops. *Sic transit gloria.*

Mr. Locke, M.P., is the engineer, and Mr. W. Tite, F.R.S., as already mentioned, the architect, under whom the works have been executed by Messrs. Lee and Son, the contractors.

A bill for the further extension of this line at the other end, namely, from Salisbury to Yeovil and Exeter, passed the Lords in committee on the 7th instant.

* These arches are covered with Seyssel asphalte, to prevent the penetration of wet.

ARCHITECTS' LIABILITIES.

IMPORTANT CASE.

IN the case *Fitch* v. *Martyr*, tried on the 7th, in the Court of Common Pleas, the plaintiff was a builder and the defendant an architect. In 1846 the plaintiff was employed to build a house by contract for a Mr. Forman, as a sub-contractor under Mr. Banks; and the defendant was employed as an architect to superintend the erection of the house according to the plans. It was one of several houses recently built on the property of Archdeacon Burnie. The amount claimed was nearly 22*l.* in respect of extra work, in reference to a window extra the contract. The defendant pleaded his non-liability.

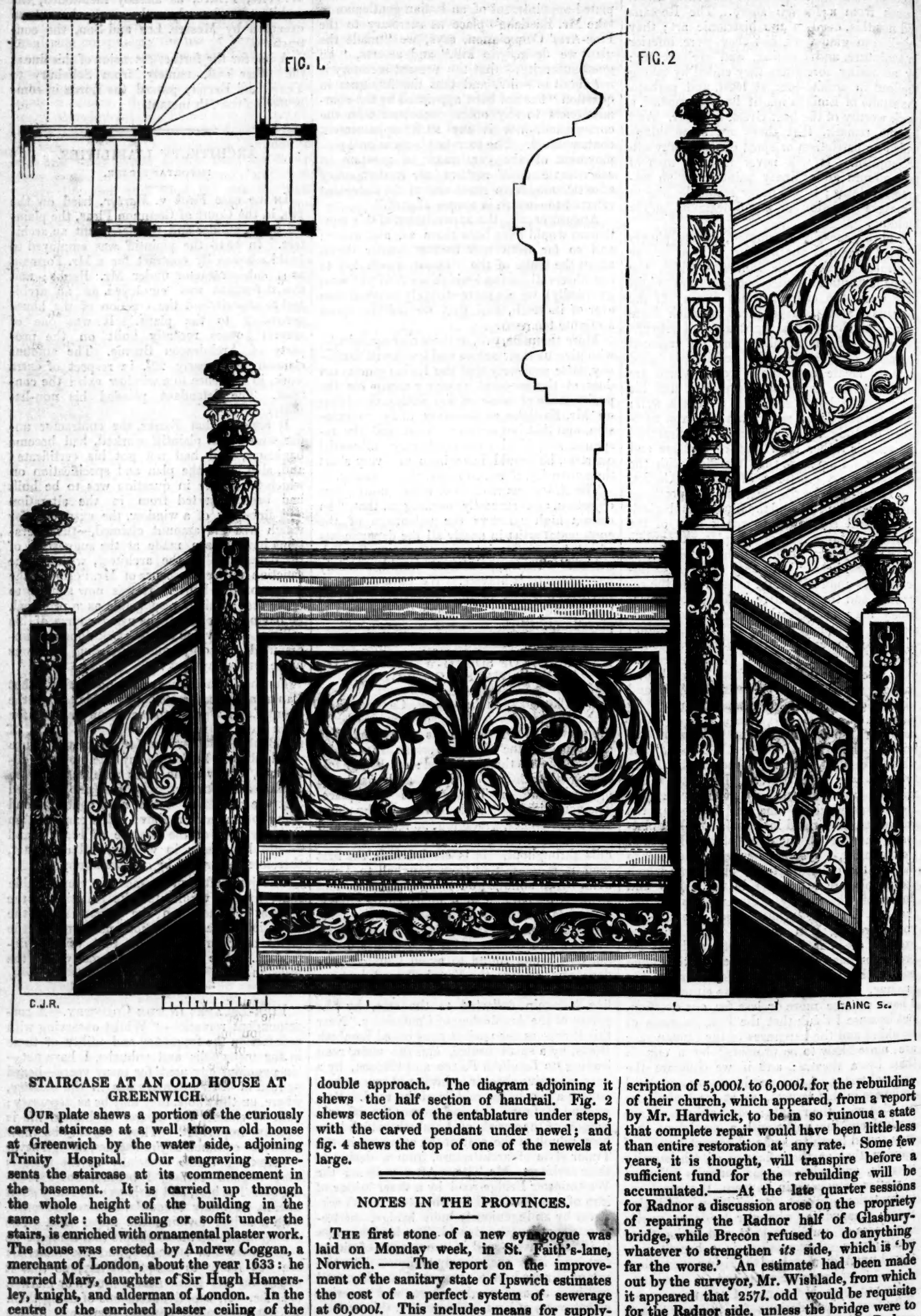
It appears that Banks, the contractor under whom the plaintiff worked, had become bankrupt, and had not got his certificate; and, also, that the plan and specification on which the house in question was to be built had been departed from in the alteration and finishing of a window, the extra cost for which was the amount claimed,—the alterations having been made at the suggestion of the defendant, as the architect, without the sanction and acquiescence of Mr. Forman, the owner of the house. It was now sought to make the architect responsible as a principal, he having gone out of the usual course of his calling. The value of the work done was undisputed, the only question being who was liable for its payment?

For the defence it was contended, first, that Banks, as the contractor, was liable to pay the plaintiff, as a sub-contractor under him, for extra work beyond the contract; secondly, if not Banks, that Forman, for whom the house was built, was liable; at any rate not the defendant, who was the mere architect between Banks and Forman. It was also objected that the alteration was a new contract, and being for an amount above 10*l.* it came within the provisions of the Statute of Frauds, and should have been in writing, and could not, therefore, be proved by oral testimony.

The jury, after an absence of a considerable time, found a verdict for the plaintiff for the amount claimed, on the ground that the alteration was a distinct job, not done on the credit of Forman, but on that of the defendant. We doubt the legality of the decision.

FIRE-ESCAPES IN THE COUNTRY.—A correspondent remarks—"Whilst observing with satisfaction the frequency and utility of these in the metropolis and suburbs, I have not—'in populous city pent' for many years—heard or read of their extensive use in the *country*, where, on the whole, they may be as necessary; and, of course, the danger to human life is equally important. They should be now nearly as common as *fire-engines*, though never superseding them, especially as the price is low,—a good 'escape,' I believe, not exceeding 30*l.* The best, and perhaps only really good one, is, on many accounts, the *canvas trough*, with a ladder forming the upper side. The management seems so simple that it might be safely trusted to strangers, and the materials are not likely to tempt robbery, so that it might be left loose near a church or market, &c., &c. If, happily, occasions of using them do not very often happen, there will be the same sense of security as in locks or bolts to doors and shutters, with the added motive of preparing it for others also—the poor and helpless. Fire-escapes might be washed with an anti-combustible solution, as mentioned by the writer in the *Mechanics' Magazine* several years back."

STAIRCASE AT AN OLD HOUSE AT GREENWICH.



STAIRCASE AT AN OLD HOUSE AT GREENWICH.

OUR plate shews a portion of the curiously carved staircase at a well known old house at Greenwich by the water side, adjoining Trinity Hospital. Our engraving represents the staircase at its commencement in the basement. It is carried up through the whole height of the building in the same style: the ceiling or soffit under the stairs, is enriched with ornamental plaster work. The house was erected by Andrew Coggan, a merchant of London, about the year 1633: he married Mary, daughter of Sir Hugh Hamersley, knight, and alderman of London. In the centre of the enriched plaster ceiling of the dining-room are the Coggan arms impaling those of Hamersley.

The interior of the house is very nearly in its original state. There is a very curious internal court. The rooms have several good doorcases and ornamental plaster ceilings.

Fig. 1 is a plan of the stairs, shewing the double approach. The diagram adjoining it shews the half section of handrail. Fig. 2 shews section of the entablature under steps, with the carved pendant under newel; and fig. 4 shews the top of one of the newels at large.

NOTES IN THE PROVINCES.

THE first stone of a new synagogue was laid on Monday week, in St. Faith's-lane, Norwich. —— The report on the improvement of the sanitary state of Ipswich estimates the cost of a perfect system of sewerage at 60,000*l.* This includes means for supplying every house with water, and for carrying off both surface and household drainage, under two systems: it also includes the entire repaving of the town, which at present is in the most disgraceful state.——It has been resolved by the parishioners of St. Thomas, Newport, Isle of Wight, to commence a subscription of 5,000*l.* to 6,000*l.* for the rebuilding of their church, which appeared, from a report by Mr. Hardwick, to be in so ruinous a state that complete repair would have been little less than entire restoration at any rate. Some few years, it is thought, will transpire before a sufficient fund for the rebuilding will be accumulated.——At the late quarter sessions for Radnor a discussion arose on the propriety of repairing the Radnor half of Glasbury-bridge, while Brecon refused to do anything whatever to strengthen *its* side, which is 'by far the worse.' An estimate had been made out by the surveyor, Mr. Wishlade, from which it appeared that 257*l.* odd would be requisite for the Radnor side, unless the bridge were to be rebuilt in stone, in which event the Radnor side would cost 800*l.* to 1,000*l.* The Rev. J. Price said he could not see the use of the county repairing their side unless the other also were repaired, and he wished to know what would become of the wooden half if it were repaired while Brecon determined in

STAIRCASE AT GREENWICH——DETAILS.

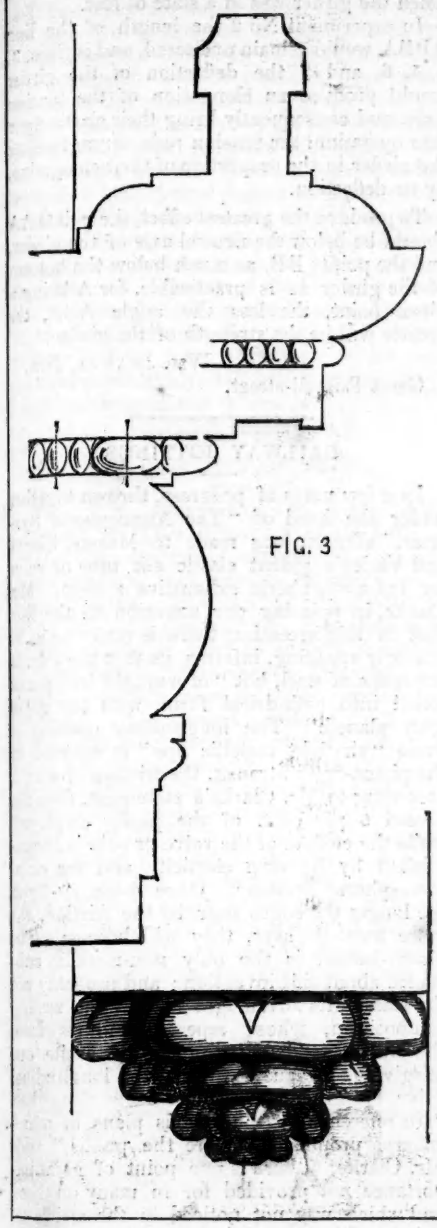


FIG. 3

FIG. 4.

favour of stone? The Clerk of the Peace informed Mr. Price that it was no uncommon thing for a bridge belonging to two counties to be built in two different styles, as each county had a right to build its own half as it thought proper! and so, in the spirited exercise of this truly independent principle, authority was forthwith given to enter into contracts under the surveyor's plan and specification for the repair of the Radnor side, and the work was thereupon undertaken by Mr. Llewellyn of Hay. The public safety, it is to be hoped, will not suffer much in its but too probable *fall* between two such wooden county stools as those of Brecon and Radnor.——A site in Gem-street, Birmingham, has been given by the governors of King Edward's School for the Free Industrial School, for the erection of which the Educational Committee of the Privy Council have voted 500*l.*, and other friends 800*l.* The estimated cost is 2,080*l.* The design, by Mr. C. W. Orford, comprises workshops, stores, and kitchens on the basement story, and school-rooms, both for boys and for girls, baths and washing rooms, committee rooms, and dining-hall on the ground-floor. The style is simple and appropriate. This institution is a sort of ragged school on an extended and improved system, and well merits a speedy completion of the subscription-list, which is yet short of the estimated cost by 780*l.* Tenders for the erection were advertised for in last week's BUILDER.——The Liverpool council mean to apply to the Treasury for permission to raise 25,000*l.* for the erection of more baths and washhouses.——The Lichfield Diocesan Church Extension Society, meeting at Wolverhampton, have lately made the following grants:—Towards building a new church at Lann Head, Willenhall, 850*l.*; increasing the accommodation at Horton Church, by re-pewing, 20*l.*; rebuilding, with enlargement, the parish church at Codsall, 150*l.*; building a parsonage-house at Wetley Rocks, 200*l.*; ditto at Little Eaton, 150*l.*; ditto at Woodville, 50*l.*; and ditto at Ellenhall, 200*l.*——The Church of St. James, Woodside, Horsforth, according to the *Leeds Intelligencer*, to which we are indebted for the following condensed account, was consecrated on 30th ult. It was designed by Mr. C. W. Burleigh, of Albion-street, Leeds. The style is second-pointed, or decorated, and the edifice has been built with reference to future enlargement, by the addition of another aisle and a western tower. At present it consists of a nave and chancel, north aisle and porch, and a bell-gable at the west end. The placing of the porch on the north side has been rendered necessary by the nature of the site, there being no southern approach. The length of the nave is 60 feet, that of the chancel about 30 feet. The west window is of four lights, the east window of three. The tracery in nearly all the windows is varied, and of purely geometrical character. The hood moulding over the interior of the windows, though of simple construction, casts a depth of shadow upon the upper portion of the tracery. The roof is of high pitch, and open to the ridge. An octagonal font, designed by the architect, was presented to the church. Lithographic views of the exterior and interior are to be published. The entire cost, including land, repairs' fund, site of parsonage-house, and repairs of damage recently done to the church by lightning, will be about 2,500*l.* The expenditure on the church itself, and the wall inclosing the churchyard, has been about 1,800*l.* Sittings for 400, all free. The foundation stone of this church was laid on 26th October, 1846.——Watton Church, near Driffield, has been considerably renovated, and the interior repainted.——Recent explorations have led to the discovery that the Anglo-Norman arches of the old church of St. Kentigern are still remaining, built up within the thick whitewashed walls of the present somewhat plain-looking parish church of Irthington. The arches, says the *Carlisle Patriot*, "so far as yet revealed, seem fine specimens of the period, rich with the *chevron* or zigzag ornament, and raised on low sturdy cylindrical pillars. The arch between the chancel and the nave, though disfigured by paint, has long been admired as one of the finest examples of the Early Norman in the county; and we doubt not every lover of what Camden calls 'venerable antiquitie' would rejoice to see the church restored throughout in its pristine style. We hear that such restoration, consequent on the recent discoveries, is contemplated, and that funds are not likely to be wanting."

EXPERIMENTS ON THE STRENGTH OF CEMENTS.

THE following is an account of experiments by hydraulic pressure conducted at Messrs. Grissell's, Regent's Canal Iron Works, on blocks composed of Portland and Roman cements and bricks of J. B. White and Sons' manufacture, with a view to ascertain the greatest resistance to crushing of the several materials. We were not present, but believe in the correctness of the statements.

The blocks were uniform in size, 18 in. long, × 9 in. × 9 in. Pressure was exerted on the ends: the power of the press was 75 tons. The trial took place 10th and 31st December, 1847.

Experiment No. 1.—On a block of neat Portland cement, 30 days old.

Pressure. Tons.	Effect.
22½	Scaled at one corner.
37½	Scaled at other corner.
52½	Slightly splitting.
56½*	Gone, apparently, for practical purposes.
67½	Slightly going.
75	Ditto.

On removal, found that the pressure held the materials slightly together; virtually for building purposes block destroyed by being split down the side, but not otherwise broken up. (Block in possession of Mr. Rendel.)

No. 2.—Block of neat Roman cement, 30 days old.

Pressure. Tons.	Effect.
22½	No effect.
26½	Ditto.
27†	Broke up suddenly.

This block was fitted remarkably square to the iron plates, hence no appearance of scaling at the edge (as in experiment No. 1) in the first instance.

No. 3.—Block of White and Sons' stock bricks, set as a 9-inch pier with neat Portland cement, 30 days old.

Pressure. Tons.	Effect.
15‡	Bricks crushing.
16	Crushed.

Cement not gone, but bricks crushed; a red-headed soft brick in middle of pier.

No. 4.—Block of stock bricks set as a 9 in. pier, with Portland cement 1 part, sand 3 parts, 30 days old.

Pressure. Tons.	Effect.
26½§	No effect till this pressure was put upon it, when it cracked, and crushed up suddenly in the direction of its length. Defect in bricks as before.

No. 5.—Brick pier of same description as foregoing, set with neat Roman cement, 30 days old.

Pressure. Tons.	Effect.
30‖	Broke up suddenly, but no appearance of crushing prior to this weight being applied.

No. 6.—Block of Whitby stone from Cragwell quarry, vertical bed.

Pressure. Tons.	Effect.
45	Scaled at bottom corner.
71½	Scaled at top corner.
75¶	No further effect.
	Not crushed up, and the body of the stone not apparently injured beyond the scale at the angles.

* 56·25 tons on sectional area of 9 inches is 1,555 lbs. per square inch, or 70·3125 tons per square foot.

† 27· tons on 9 inches area is 746 lbs. per square inch, or 33·75 tons per square foot.

‡ At 15 tons is 470 lbs. per square inch, or 18·75 tons per square foot.

§ At 26½ tons is 726 lbs. per square inch, or 33·125 tons per square foot.

‖ At 30 tons is 829 lbs. per square inch, or 37·50 tons per square foot.

¶ 75 tons per 9 in. area is 2,074 lbs. per square inch, or 133·3 tons per square foot.

No. 7.—Block of Bramley Fall stone.

Pressure. Tons.	Effect.
75	No perceptible effect.

No. 8.—A block of concrete stone (for description see below) 48 days old.

Pressure. Tons.	Effect.
22·5	Cracked.
24·375*	Gone for all practical purposes.
30	Broke up.

This block was composed of pieces of Portland rubble stone, cemented together with Portland cement and sand in proportion of one part cement to two parts sand. The small block sawn out of a larger one of 3 tons weight, which was cast in a mould.

No. 9.—A block of concrete stone, 70 days old.

Pressure. Tons.	Effect.
15	Scaled at corner.
16·875†	Crushed.

The same description applies to this block as the foregoing, with the exception that the cement was mixed with sand in parts of one cement to three sand.

No. 10.—A block of concrete stone, 270 days old.

Pressure. Tons.	Effect.
63·75	‡A pressure commencing at 11 tons, applied gradually until it reached 63·75 tons, without any perceptible effect. On the last weight being applied the block fell to pieces with a report, shewing equal fractures all through of cement and stone.

Description same in every respect as to No. 8, but this block was 9 months old.

Weight of concrete stone 135lbs. per foot cube.

No. 11.—A block composed of Portland cement 1 part, and sand 2 parts. 52 days old.

Pressure. Tons.	Effect.
30·375	Slightly cracked at one corner.
37·5	No further effect.
45	§Cracked throughout suddenly, not practically injured till the last weight was applied.

This block was steeped in water for 7 days very soon after it was made. Weight before steeping 106½lbs., weight after steeping 107½lbs., gain in that time 1 per cent.

No. 12.—Block composed of Portland cement, 1 part, sand 3 parts. 52 days old.

Pressure. Tons.	Effect.
15	Slightly cracked at one corner.
25‖	Broke up suddenly.

Steeped in water as No. 11. Weight before steeping, 104 lbs.; ditto after ditto, 105½ lbs.; gain in that time, 1½ per cent.

Weight per foot cube of Nos. 11 and 12, 127 lbs.

No. 13.—Block composed of Roman cement, 1 part, sand 2 parts. 52 days old.

Pressure. Tons.	Effect.
	Went to pieces before 3 tons' weight was fairly upon it.¶

Steeped in water as Nos. 11 and 12. Weight before steeping, 100 lbs.; ditto after ditto, 105 lbs.; gain in that time, 5 per cent.

Weight 120 lbs. per foot cube.

No. 14.—Block composed of Portland cement, 1 part; shingle 10 parts.

Pressure. Tons.	Effect.
7.5	Cracked at one corner.
10**	Crushed.

Weight 139 lbs. per foot cube.

No. 15.—Block of White and Sons' stock bricks, set as a 9 inch pier, with Portland cement, 1 part; sand 2 parts. 52 days old.

Pressure. Tons.	Effect.
16.875	Slightly going.
22.5	Crushed.

At 22½ tons is 608 lbs. per square inch, 39.5 tons per square foot.

* At 24 tons crushing weight is 664lbs. per square inch, 42·6 tons per square foot.

† At 16 tons is 442lbs. per square inch, 28·4 tons per square foot.

‡ At 60 tons is 1,660lbs. per square inch, 106·6 tons per square foot.

§ At 45 tons pressure is 1,244lbs. per square inch, 80 tons per square foot.

‖ At 25 tons pressure is 691 lbs. per square inch, 44.4 tons per square foot.

¶ At 3 tons is 83 lbs. per square inch, 5.4 tons per square foot.

** At 10 tons is 276 lbs. per square inch, 17.7 tons per square foot.

No. 16.—Block of bricks as above, set with Roman cement, 1 part; sand, 2 parts. 52 days old.

Pressure. Tons.	Effect.
5.625	Cracked, owing to bad brick.
14.062*	Crushed.

The 5 experiments on brick give 22 tons as the average resistance to crushing of a 9-inch pier.

Weight, 104 lbs. per foot cube.

Comparison of the relative strength of Portland and Roman Cement, as shewn by the annexed statement:—

1. *Blocks of Concrete Stone, Nos.* 8, 9, 10, *Table* 1.—Attained at the age of six weeks, the average strength of bricks, viz., 24 tons, upon a 9-inch area, or 42 tons per square foot; while at nine months old a power of 63 tons per 9-inch area, or 106 tons per square foot, is required to crush the concrete stone, shewing it to be but little inferior to the best Portland stone.

2. *Bricks, No.* 3, 4, 5, 15, 16, *Table* 1.—The greatest resistance in these five experiments found to be 30 tons, and the *average* resistance 22 tons—giving about 600 lbs. per square inch, or 38 tons per square foot, as the strength of brickwork in cement. Owing to the bricks giving way in each case before the cement, the peculiar properties of Portland cement were not elicited in these experiments.

3. *Blocks composed of Cement with Sand, Nos.* 1, 2, 11, 12, 13.—

		Tons.
No. 1.	Portland cement neat, *not* crushed at the whole power of the press—(this block in possession of Mr. Rendel)	75
11.	Portland cement one part, sand two parts, *crushed*	45
12.	Ditto one part, sand three parts, crushed	25
2.	Roman cement neat, crushed ..	27
13.	Roman cement one part, sand two parts, crushed	3

Shewing a superiority in strength of neat Portland cement over neat Roman cement of 3 to 1; of Portland cement and two sands, over Roman and two sands, of 15 to 1; and of Portland cement and three sands, over Roman and three sands, of 8 to 1.

Assuming three parts sand as the proper quantity to mix with Portland cement for building purposes, a connecting power is gained three times *stronger* than that given by one Roman cement and one sand (the proportion usually adopted), at no increase in the cost.

	s.	d.	Per bushel.
Thus, assume the price of Portland cement, at per bushel	2	6	
Three bushels sand, at 3d. ditto ..	0	9	
4)	3	3	(9¾d.
Roman cement, at per bushel ..	1	3	
One bushel sand	0	3	
2)	1	6	(9d.

TRUSSED IRON GIRDERS.

SIR,—Having noticed in your last week's paper an account of some experiments with a girder made at Mr. Cubitt's works, I beg to suggest an explanation of the causes which produced the difference in their results, and also to lay down a rule for the guidance of those who think proper to employ tension trusses to girders.

The principle of the tension rods being to counteract, by their elastic strength, the elongation of the lower part of the girder, which takes place by deflection, it follows that if the line ABBA is shortened, by the points AA being brought nearer together by the deflection of the girder, they will, instead of counteracting, add a portion of the power that has been applied in tightening them to the deflection and consequent weakening of the girder.

When girders are deflected by transverse strains, the upper portion is compressed, and the lower extends.

The line in which these strains meet is termed the neutral axis, which in the girder under experiment would be about 2½ inches from the upper edge, and it will be found in experiment No. 1 that a deflection of 2½ inches would, by bringing the points AA nearer together, make the line ABBA shorter than when the girder was in a state of rest.

In experiment No 2 the length of the line ABBA would remain unaltered, and in Nos. 3, 4, 5, 6, and 7 the deflection of the girder would produce an elongation of the tension rods, and consequently bring their elastic force into operation, the tension rods strengthening the girder in the proportion of their elongation, by its deflection.

To produce the greatest effect, the points AA should be below the neutral axis of the girder, and the points BB, as much below the bottom of the girder as is practicable, for A being a given point, the less the angle ABB, the greater will be the strength of the girder.

WM. JEAKES, Jun.

Great Russell-street.

* At 14½ tons is 396 lbs. per square inch, 25.7 tons per square foot.

RAILWAY JOTTINGS.

IN a few notes of progress, thrown together under the head of "The Atmospheric Systems," allusion was made to Messrs. Clarke and Varley's patent elastic slit tube or valve for the atmospheric exhaustive system. Mr. Clarke, in pointing our attention to the fact that in this invention there is really no *valve* properly speaking, informs us that the tube is not made of steel, but "of wrought-iron plates rolled into cylindrical form, with the edges truly planed." The longitudinal opening of these "air-tight metallic lips" is effected by the piston-rod in transit, the friction of which, according to Mr. Clarke's statement, does not exceed 5 per cent. of the power employed, while the closure of the valve or tube is accomplished by its own elasticity and the outer atmospheric pressure. Once made air-tight, the longer the edges wear by the friction, the more true, he says, they will become. The piston-leather is the only non-metallic substance about this invention; and probably not the least of its advantages is, that the sealing composition, whose repeated failures from the outset tended so much to excite our misgivings of success with the longitudinal valve, is in this case thrown aside altogether. "In reference to the various plans of atmospheric propulsion before the public," adds Mr. Clarke, "there is one point of great importance not provided for in many of them, and which was not noticed in the article alluded to [the main object of which was merely to record progress]. In admitting air to the piston, the opening in the tube immediately behind it should be equal to its area, that the air may not have to follow through the tube but flow therein with its full and regular power: this, in our plan, is amply provided for. In drawing a comparison between compressed and exhausted air, I would just observe, that in the former case a long column of dense air has to be kept in rapid motion, both before and behind the piston, involving enormous friction; while, in the latter, the air in motion is only in front of the piston and in a rarified state, the atmosphere behind dropping in without friction as the piston advances."——At the Paris Academy of Sciences, M. Ferdinand, engineer, lately proposed to construct a floating tunnel from Calais to Dover, for the wires of the electric telegraph, and large enough to be traversed by small locomotives, for the conveyance of passengers. The plan was referred to one of the members for examination.——The Oxford, Worcester, and Wolverhampton line is to be opened between Abbot's Wood and Worcester, before the Worcester music meeting takes place. The works on the main line are now making steady progress. The cuttings and levellings on the whole line between Worcester and Stourbridge are completed, except near Oldswinford; and the Dudley tunnel is approaching completion. The bridge over the line at the Dudley station, which partially fell down some time ago, has been repaired.——At the Guide-bridge station, on the Manchester, Sheffield, and Lincolnshire line, a short tunnel had been in an imperfect state, and the engineer having advised its removal, the workmen lately took down the arch, and completed a bridge in its stead; but in shifting the fallen materials, a portion of the wall or abutment

which supported the arch gave way, and unfortunately buried three of the men, who were killed on the spot.——The works on the Dumfries section of the Carlisle and Dumfries line will be opened for public traffic in a few weeks. It joins the Caledonian at Gretna, and will bring Dumfries into the general circle of railway communication. Northwards from Gretna several bridges and cattle-creeps are still in a rather backward state; but the permanent iron pathway has been generally laid down. The mason-work on Mr. Ross's contract, which extends a little below Annan to Cummertrees, is all but finished; and the station at Annan will soon be ready for the roof. Mr. Ritson's contract, the next we come to, is not quite so far advanced. The rest of the line up to Dumfries is being formed by the Messrs. Jeff, and is, in all respects, nearly completed. A temporary station, near Dumfries, to be commenced immediately, will be superseded by 'a large and magnificent fabric.'

VENTILATION OF SHIPS.

Sir,—The suggestions of your correspondent in The Builder of the 24th ult. seem to me somewhat superfluous. A great many theories, very excellent on shore, go for nothing at sea. The idea of admitting fresh air to the lower deck by pipes attached to the various masts is open to several objections. If there were but one pipe to each mast, there would be periods when its action would be interrupted. On certain points of the vessel's sailing the pipe would be brought *under the lee* of the mast, and the current of air reversed. This state of things in warm latitudes, where ventilation is chiefly required, might continue for weeks together, from the prevalence of the trade winds from the same quarter. If the number of the pipes were increased they would be so much in the way as to interfere with the working of the ship. To make channels in the mast itself would be still more objectionable, as tending to weaken a part where great strength in small bulk is absolutely required.

The windsails at present in use answer the purpose of introducing fresh air much better than any contrivance that could be substituted for them. They consist of trunks of stout canvass from 14 to 20 inches in diameter, distended by means of hoops at intervals of every 5 or 6 feet, and have an opening at the upper part flanked by two canvass wings. These windsails pass down to the lower deck, through the hatches, and are triced up to the stays aloft, and their mouths kept to windward by means of bowlines, and trimmed to every shift of wind.

In large ships, especially men of war, the "galley," or cooking stove, is *generally* upon the lower deck, and a large funnel ascends from it abaft the foremast. This funnel is provided with a proper cowl; and if the stove be large enough for the use of the ship, the funnel will always be of ample dimensions to carry off the foul air. The lower deck is certainly the best place for the "galley," as far as regards ventilation; but there are many other reasons besides the want of space that contribute to this position being denied it in small vessels. On board emigrant ships all the danger and inconveniences incident to such a situation would be indefinitely increased. A number of passengers, unlike a well-disciplined ship's company, can never be made to take proper precautions against the danger of fire to which they would be so imminently exposed; no regularity or order could be maintained about the galley, and in the control for precedence which ensues where passengers prepare their own food, the ship's cook would not be able to find room to cook the provisions for the cabins and crew.

As for the great comfort that the females are to take in cooking, or the benefit derivable from the warmth that the fire is to diffuse, I am afraid that the advantages would be more than counterbalanced by the disadvantages. People now suffer on board emigrant ships more from their own laziness and dirty habits than any other course. Most of the females who take passage in the steerage of an emigrant ship would never see daylight from land to land, if they were not obliged to go on deck for their hot water, kettles, &c. If the steerage passengers were generally to cook below, there would be no such thing as "breaking them out" at all; and the heat diffused by the galley would add still more to the foul heap of corruption engendered about them.

In fine, it is not any new system of ventilation that is required in ships, but only a proper attention to the precautions in general use; and, above all, such a code of regulations as shall compel the passengers to keep their clothes and bedding dry, clean, and well-aired. As for themselves, they ought to pass eight hours at least out of the twenty-four on deck, when the weather permits. S. E. R.

ART-UNION OF LONDON AND THE BOARD OF TRADE.

On Wednesday a deputation of gentlemen, representing various bodies of metropolitan artists, had an interview with the Right Hon. Henry Labouchere, at the office of the Board of Trade, to present a memorial agreed upon at a general meeting of artists in May last,* deploring the intention of depriving the prize-holders of the right of selecting the prizes, and praying the Board of Trade to withdraw any interference in this respect with the Art-Union of London, and to permit it to carry out its objects according to its original and vital principle. The deputation consisted of the following gentlemen:—Mr. C. Lushington, M.P.; Mr. J. Jackson, M.P.; Sir W. C. Ross (the Royal Academy); Mr. J. H. Illidge, Mr. G. R. Ward, and Mr. Fredk. Gush (the Institute of Fine Arts); Mr. J. Fahey (the New Water Colour Society); Mr. Geo. Fripp (the Old Water Colour Society); and Mr. E. T. Niemann (the Free Exhibition). The Society of British Artists had previously sent a deputation for the same purpose.

The memorial was signed by more than 300 artists, including half the members and associates of the Royal Academy. Mr. Labouchere said it was a very weighty document, deserving the most serious consideration of the Board, and should certainly receive it.

THE ANCIENT HALL AT SAFFRON WALDEN.

MERCHANT RESIDENCES.

In our last number we gave a view and some account of the ancient hall recently opened to light and then destroyed at Saffron Walden. The *Literary Gazette* of the same date gives some particulars of the building containing it, from which we take the following:—

Its parchmentary writings of about 200 years ago, the earlier having been at some anterior period destroyed, call it the "Iron Crown," but it is conjectural whether it ever was an inn—a common fate with this kind of building,—and the whole edifice would rather indicate that it had been the house of a wealthy merchant of the time of Edward the Fourth, with its jutting upper stories, gabled roofs, mullioned projecting windows and carved sills, open balcony, and stairs leading into it, after the manner of that period. At the west end of this building, and rising from the ground the whole height of it, about 27 feet, is a banqueting-hall, for so we designate it in the absence of anything to indicate an ecclesiastical character. The lower part of this hall is much mutilated by alterations for mercantile purposes in later times, but the upper part is protected by a ceiling and partitions, and covered with paper and whitewash, and in good condition. Apropos of which, mediæval antiquaries are much more indebted to the latter than they would like to acknowledge—or where would have been the mural paintings, and much of the sculptured relief of the middle ages, if it had not been for their *preservative* the much-abused *whitewash?* The material used in the general building is oak, but the carved and moulded portions are of *chestnut*. The only way of accounting for the profusion of the latter in old edifices is, that it must have been imported for superior work, as mahogany and other woods are now; and this hall, with its high narrow windows, carved braces, projecting corbel heads, pendants, and screen, must have been, though not a large (about 19 by 18 feet), still an imposing adjunct to the mansion of a merchant.

Whether halls of this description, forming a portion of merchants' houses, were of frequent occurrence in those days, there are not now materials enough left to ascertain, and only one or two instances are upon record. Crosby-hall, Bishopsgate, London, affords a splendid specimen of this kind of attachment, although little more is known of its builder, Sir John Crosby, than that he was an affluent merchant and dealer in wool; and the author of "Prolusiones Historicæ" presents us with a second instance, discovered some years back in Salisbury, which was then restored and fitted up as a china shop. This was clearly ascertained to have been built some time after 1467, by John Halle, who was four times mayor of that city, a wealthy merchant of the staple, and a dealer in wool also; and these two halls, though varying in size and detail, were erected within a period of ten years, and it is probable that the owners and builders, living at the same time, and both being merchants of the staple and dealers in wool, were known to each other; and, as Saffron Walden was then a place where wool-combing was carried on to a great extent, it is not impossible that our host of the "Iron Crown" might have been personally known to his London and Salisbury contemporaries, and followed their example in erecting a private merchant's banqueting-hall, but of the exact date of his existence or his name, there is nothing left to tell.

* See p. 250 *ante*, for report of the meeting.

ON THE MISUSE OF THE TERMS STATUARY, SCULPTURE, CARVER.

If we look at the derivation of these terms, and the manner in which they are now applied, we cannot but be astonished at the departure from their original meaning, shewing how necessary it is that the sense of words should be attended to. A statuary (from *statuarius*) was anciently understood to be a designer and maker of statues, and a statue to be a figure or bust, &c., either standing free of any background, or in bold relief. But we scarcely ever find it used in this sense now; statuaries disclaim it, and masons use it to signify a worker in statuary marble. The next term, sculptor, has taken the place statuary should occupy. Our statuaries think it presumptuous for an ornamental sculptor to use the term at all; they call him a carver; whereas sculpture (from *sculptura*) is a general term, including all kinds of figure and ornamental work, cut in hard substances in relief. This appears to be the true sense, although it formerly had a wider meaning, and included engraving, &c. The term carver (from *carptor*) ought to be entirely rejected, as unsuitable for any kind of sculptor, and, in accordance with its original meaning, let it be applied to a cutter of meat. How, then, it may be asked, shall we distinguish the various kinds of sculptors?—by some suitable adjunct, if any particular branch be followed, or without any, when all branches are included, as portrait sculptor, architectural sculptor, ornamental sculptor, and sculptor, let the statuary call himself a statuary, and shame the usurper. We should then have terms somewhat more definite and suitable than we have at present. Z. Y.

Restoration of "Newcastle."—The ancient castle of Newcastle is in rapid process of restoration by the local Society of Antiquaries. The Norman Chapel has already been renovated, we hear,—every moulding replaced. In the chancel were traces of fire. No remains of stained glass, coloured tiles, or painting on ceiling or walls were found. The ancient floor consists of rough hewn flag-stones about a foot below the later one. A drain channel of lead was discovered in the thickness of the wall over the chancel arch. The next restoration is that of the doorway leading into the great hall, the mouldings of which are being recut. An interesting chamber, of small dimensions, at the head of the stairs leading to the great hall, with an arcade of Norman arches running round three sides of it, is to be next restored. There is to be a banquet in the great hall on 3rd proximo, when the sleeping echo of ancient revelry will be reawakened for the first time for many a day. The whole of the keep has now been leased to the Antiquarian Society.

New Books.

Remarks on Christian Grave-Stones, with Working Drawings. By the Rev. ECCLES J. CARTER, M.A. Masters, Aldersgate-street.

THE Rev. Eccles Carter, who, as Honorary Secretary of "The Bristol and West of England Architectural Society," has laboured zealously to promote the extension of architectural knowledge, and induce the preservation of our ancient structures, has published this volume, as he says, for the use of those who "are no longer contented with the heathenish tombs and monuments which have, alas, for so long a period, profaned and disgraced our churches and churchyards." It is intended more especially for the less wealthy classes, for which reason designs of the least costly kind are given, and such as are suitable for the circumstances of the poor. It contains twelve headstones, and eight flat stones, with instructions for working, and will be found very useful.

In a note to sculptors and masons, the writer remarks:—"There is an important question as to the proper material to be used for sculptured grave-stones. The one most to be avoided is Bath stone, or freestone of any kind, as no oiling or painting will secure it from the effects of frost. Each neighbourhood furnishes its own peculiar quality of stone, and the masons of the country are the best judges of its durability. The Bangor slates, which are now much used, are said to stand the weather; and as they are easily worked, and have a very agreeable appearance in a churchyard, they may furnish a good material for the head-stones here recommended."

He urges, with some truth, that if stone-cutters would be contented with the same profit in this department of their trade as they get on other work, they would be more extensively employed in it than is now the case.*

Christian Memorials, Designed and Drawn on Stone, by WILLIAM OSMOND, Jun., of Salisbury: Masters, Aldersgate-street. Parts I. to IV. inclusive.

THIS work, which is publishing in parts at intervals, is intended to carry out still further the intention of the previous work. Mr. Carter says if wealthy persons wish for such memorials their course is to apply to an architect, who will at once furnish them with designs and working drawings. Mr. Osmond, however, says, Here they are for you, to a certain extent, ready to your hand. Each part contains four plates, and includes, amongst those already published, two coped stones and an alphabet. The remainder are different versions of one form, the cross,—and serve to shew to what an extent it may be varied.

Correspondence.

FRICTION OF ROLLING BODIES.

SIR,—I shall feel obliged if any of your correspondents can give me the difference of friction between rolling and sliding bodies on a horizontal plane; also the difference of friction between rolling cylindrical and spherical bodies. A formula for the above would further oblige.—I am, Sir, &c.,

B. P. S.

Haddiscoe, Norfolk, July 10th.

RETURNED SHOP-FRONTS.—We have several times had occasion to point out the insecurity often attending corner houses, where the whole of the lower part of the front and the returned side is left out for shop fronts: the doorway is formed at the angle, and the whole dependance is placed on a few story posts, often injudiciously placed and insecurely based. Where such an arrangement as this is attempted in connection with old existing party-walls, the danger is necessarily increased, and greater care is demanded. A construction of this kind at the corner of Pond-street, in the Fulham-road, failed on Sunday last, but being fortunately observed in time was shored up, and by means of rebuilding the basement front-wall in cement, and a re-arrangement of the story-posts, will probably be saved.

* For an article on the subject of gravestones, with some illustrations, see our 5th volume (1847), p. 291.

Miscellanea.

PROJECTED WORKS.—Advertisements have been issued for tenders by 28th July for the completion of the Town Hall, Birmingham; by 26th, for slaters' work at the Metropolitan Barracks and Ordnance; by 27th, for additions and alterations at the Sudbury Union Workhouse; by 31st, for repairs at Lambourn Church, Berks; by 31st, for the erection of Golbourn Church, Lancashire; by 1st August, for the erection of fences to inclose two paddocks adjoining St. John's Church, Bethnal-green; by a date not specified, for rebuilding a dwelling-house, shop, and warehouse, at Hull; by 17th July, for the erection of a goods-shed at the Maryport station of the Carlisle Railway; by 26th, for the supply of stores for the locomotive carriage, and carrying department of the Eastern Counties Line; by 18th, for the supply of paving, granite, flint, rag, and gravel, for St. Mary Newington, Surrey; by 18th, for making three miles of a turnpike-road and building bridges at Gartmore (Glasgow); and by 1st August, for removing mud from the basin of the Kensington Canal, Kensington.

A QUESTION OF CREDIT, — IN MORE RESPECTS THAN ONE.—*Townsend* v. *Neale.*—Last week an action was tried in the Court of Common Pleas, brought by the plaintiffs, Messrs. Townsend, paper manufacturers in Goswell-street, to enforce payment of a claim for papering the Black Bull Inn, Holborn, kept by defendant.—The plaintiffs stated that Mr. Owen, a surveyor, called at the plaintiffs' in December last, for the purpose of giving an order for papering the Bull Inn, but plaintiffs were not satisfied to execute the order without seeing defendant. A person was, therefore, sent to defendant, to whom he gave express instructions for the work to be undertaken upon his own responsibility, but under the direction and superintendence of Owen. Accordingly, the patterns having been selected by Owen, the rooms of the Bull Inn were decorated in the manner pointed out by him. Witnesses proved the facts as above stated; and it was further shewn that defendant had offered to pay the debt by instalments after a little time, and on such occasion nothing was said by him as to any credit agreed upon. Defendant contended that the work, which was finished in February last, had been done upon a six months' credit; that there was a distinct agreement in a conversation between Owen and one of the plaintiffs, about the time of the former selecting the patterns, that the work was not to be paid for until six months after it was completed; and that, moreover, the plaintiffs' bill contained the grossest overcharges. Owen swore to the conversation alluded to, and that *lower prices were agreed upon.*—The defendant had refused to measure the work with plaintiffs' surveyor, Owen, or to acknowledge that his certificate was necessary before he was paid for his work.—Surveyors, on part of defendant, proved in evidence, that the quantity of paper used was less by 50 per cent. than that charged for, and that the paper and labour were greatly overcharged.—The son of one of the plaintiffs was called as a witness in reply, who stated that he took the order from Owen, and the prices charged were *those mentioned at the time,* and the invariable prices charged for such work by plaintiffs in their business.—The Judge, in summing up, left it to the jury to say whether a six months' credit was agreed upon; if that were so, there was an end of plaintiffs' case; but if they thought otherwise, the question as to the amount remained. Upon this subject the testimony was conflicting. It was entirely for them to determine upon the evidence whether any or how great a deduction ought to be made from the sum sued for.—The jury found for plaintiffs for the full amount—namely, damages 86*l.* 17*s.*

GOVERNMENT SCHOOL OF DESIGN.—On the 21st instant, Mr. C. J. Richardson will give a lecture on perspective in the evening, at the school. Any person desiring to attend may obtain a ticket by applying to the secretary of the school. According to the *Athenæum,* the Committee of Management has appointed Mr. R. N. Wornum, author of "The Epochs of Art," to the office of Lecturer on the History of Art in relation to Ornament. His position will be independent of the masters:—an arrangement that need not be disadvantageous to co-operation and unity of purpose. His course will consist of ten lectures, one to be delivered every month—commencing on the re-opening of the school in October.—The Class of Form, under the superintendence of Mr. Townsend, has been rendered complete by restoring to it the section of Figure Drawing from the Antique, which, as a temporary arrangement, had hitherto been included in the Class of Colour.—Prizes are announced for the best specimens of the productions of the students: the exhibition of these and the distribution of the prizes will take place at the close of the School before Christmas.—It is said that the long-complained-of deficiency of space for the business of the School is under the consideration of Government—with the view of remedying this serious disadvantage.

THE PANTHEON, PARIS.—The Church of St. Geneviève, otherwise called the Pantheon, concerning the bad construction of which much has been said by different writers, has been submitted to a violent ordeal during the last dreadful insurrection in Paris. The church was turned into a citadel by the insurgents; and, as we are told, received against its sides more than sixty cannon-balls, discharged closely against it. The walls are pierced through and through, the bronze gates were broken like glass, and the columns of its fine portico have suffered wofully; nevertheless, Soufflot's work stands well as a whole, and its safety seems in no degree compromised, notwithstanding the violence it has suffered.

FAILURE OF A CHURCH ROOF AT LIVERPOOL.—The new church at St. Peter's, Rock Ferry, Liverpool, has been closed in consequence of the instability of the roof. Mr. Hay, architect, being called in, condemned the original construction, as well as the means adopted to render it secure. The incumbent has declined to officiate until something is done, and has offered a large sum for making it safe.

THE TUMULI OF WESTERN AMERICA.—The tumuli or mounds of the Ohio valley are clearly distinguished from each other by position, structure, and contents. Some are deemed sepulchral; others are connected with the superstitions of the builders; others still, the sites of ancient structures, or in some way connected with the military system of the ancient people. The sepulchral mounds stand isolated or in groups, apart from other works; those which are deemed sacred are found alone within the enclosures. A peculiar feature of the mounds is that they almost invariably cover altars of burned clay or stone. The altars are generally round, always symmetrical, and occasionally of great size. One has been discovered 60 feet long by 12 broad, covered with remains of ancient art. Trees growing upon the works shew that their origin must date back a long period; the forests that cover them being in no way distinguishable from the other forests. Within the mounds are found implements, ornaments, sculptures, &c. &c., composed of materials generally foreign to the region in which they are discovered, and often exceedingly rare and beautiful. The implements and ornaments are more generally made of stone, and they wrought the rarest minerals with great skill. The lance-heads and cutting implements were generally made of quartz, some of them from the pure limpid crystals of this mineral, and some from obsidian. From one altar were taken several bushels of finely-wrought spear-heads of milky quartz, nearly all of which had been broken up by the fire. In another altar a slight excavation disclosed upwards of 600 spear-heads. The carvings on stone display no inconsiderable skill. They exhibit a close observation of nature, and an attention to details which is not looked for among a people not considerably advanced in the arts. They are remarkable for their faithfulness; they display not only the general form and features of the animal sought to be represented, but to a surprising degree their characteristic attributes and expression. Among the sculptures are also some of the human head, which it may safely be concluded display not only the characteristic features of the ancient people, but also their modes of adjusting their hair, their style of ornament, &c.*

* Condensed from a paper read at a geological meeting at Boston, U. S., reported in the *Boston Mercantile Journal.*

DISPENSARY AT BRIGHTON.—A competition, limited to six architects, has just taken place for a public dispensary at Brighton. The design of Mr. Herbert Williams, of London, has been selected for the building, and that of Mr. G. Somers Clarke, of London, for the premium, as the second best. This building will form a prominent feature of the Queen's-road, being the new road now forming to the railway terminus, and is intended to be commenced immediately.

BATHS AND WASH-HOUSES.—On Saturday the vestry of the parish of St. Marylebone voted 10,400*l.* to be raised by loan for the erection of baths and wash-houses, on the site recently purchased for the purpose near the Yorkshire Stingo.

TENDERS

For finishing four houses in the Wandsworth-road. Mr. John Young, Architect.

Berry and Brown	£2,215
Harrison	2,043
Dove	1,992
Jay	1,934
Colebatch and Marsh	1,896
Park and Co.	1,820
Goulding	1,722
Norris	1,544

For Wesleyan Chapel, St. John's-square, Clerkenwell. Mr. James Wilson, Architect.

Jay	£3,944
Lawrence	3,855
Smith	3,722
Norris	3,677
Wood	3,650
Curtis	3,584

TO CORRESPONDENTS.

"*J. T. T.*"—On inquiring into the circumstances, we are informed that the lowest tender was accepted. The amounts appear to have been mis-stated.

"*Y. Z.*"—Laxton's or Skyring's.

"*Subscriber.*"—Remove the infected parts: wash with a hot solution of copperas, and let in *air*.

"*J. M. M'C.*" misunderstands the letter to which he has replied.

"*Oak.*"—A correspondent asks where there is a timber-yard where nothing is sawn but oak?

"*Edinburgh.*"—We are compelled to postpone a continuation of our notes till next week.

"*Coulson* v. *Branson.*"—Next week.

"*Masonic Symbols.*"—Ditto.

"*Fides.*"—Ditto.

"*Books.*"—Notices of several books have been accidentally delayed. We hope, before long, to repair the omission.

Received.—"R. M. P." (shall appear), "G. W." (we shall be glad to know the purpose of the building), "C. E. D.," "F. C.," "A Brickmaker" (we hope to give such reports occasionally), "W. D.," "An Inhabitant of Brompton," "J. B.," "M. P.," "Esquire," "F. D.," "J. A.," "R. S. M.," "J. C.," "J. H. A.," "An Architect," "W. D.," "Synoptic Tables for the Calculation of Railway Earthwork, in all cases of Sidelong and Level-lying Ground," by Homersham Cox, B. A. (Weale); "Homes for the Working Classes," by Francis Cross; "Railways in India," by J. Browne, C.E., 2nd edit. (Williams and Co.); "Familiar Explanation of the Higher Parts of Arithmetic," by the Rev. F. Calder, B.A. (Whittaker and Co.); "The Ecclesiastical and Architectural Topography of England: Bedfordshire" (J. H. Parker); "The Private Letters of Queen Victoria and Louis Philippe," by J. A. P. Judge (Strange, Paternoster-row).

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

ADVERTISEMENTS.

STEAM-ENGINES FOR SALE.—One of 16-horse power, one of 12-horse power, one of 5-horse power, one of 2-horse power, and one of 1-horse power, with tubular boiler.—JAS. CURRIE, Engineer, 11, Savage-gardens, Tower-hill

RIDER'S RAILWAY BRIDGE.—To Railway Companies.—A PROSPECTUS of the above newly-invented IRON TRUSS RAILWAY BRIDGE will be forwarded, and contracts entered into, or licenses granted for its erection, on application to Mr MOULTON, Bradford, Wilts.

THE PATENT OFFICE and DESIGNS REGISTRY, 210, Strand. The OFFICIAL CIRCULAR of INFORMATION, detailing the eligible course for the protection of inventions and designs, with Reduced Scale of Fees, may be had gratis at this office. Letters Patent and Registration of Designs, secured at the smallest possible trouble and cost, by application, personally or by letter, to Messrs. F. W. CAMPIN, and Co., the agents, 210, Strand, the corner of Essex-street.

VALUABLE INVESTMENT.—Partnership or Licences for Districts, or entire Counties, under British and Foreign Letters Patent.—HUTCHINSON and Co.'s Indurated and Impervious Stone, Chalk, Sand, Plaster of Paris Works, Carton Roof Sheeting, Wood, &c.—The produce supersedes all other building and decorative materials for richness of effect, cheapness, and perfect durability. Specimens to be seen at the Chief Offices, East Temple Chambers, 2, Whitefriars-street, Fleet-street, London; also at the Indurated Stone Sand Works, Tunbridge Wells, Kent; or a la Maladeira, near Caen, France. All particulars afforded at H. and Co.'s Offices; or of Mr. W. HUTCHINSON, Castle Hotel, Tunbridge Wells, Kent.

BENHAM'S ICE CLOSETS for Keeping Provisions perfectly Cool during the hottest weather.—For economy, as well as comfort, they are invaluable; also, for cooling wine, or ensuring a delicious draught of cold water to admirers of that beverage; price three guineas and upwards. Benham's Cream Freezers will freeze a quart of cream, fit for the table, in six minutes; price five guineas. Patent Knife Cleaners, Benham and Sons, Agents, price 7*l*s. These machines not only clean, but actually polish the knives, and the most unskilful person can accomplish the work in less than one-fourth the usual time. They are now adopted at all the principal hotels.—19, Wigmore-street, Cavendish-square.

YELLOW FLOOR BATTENS.—Wanted, about 40 squares of best dry 1¼ inch PREPARED YELLOW PETERSBURGH BATTENS.—Address to Mr. HITCHIN, 1, Montpelier-street, Brompton.

TO ARCHITECTS.—COMPETITION AND OTHER DRAWINGS.

MR. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Picturesque Architecture of Paris, Ghent, Rouen, &c.," and of "London as it is," offers his services in Tinting Backgrounds, Landscapes, Perspective Views, Interiors, &c. From the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner.—Address, Mr. BOYS, 31, Great Titchfield-street, Oxford-street.

TO the Nobility, Gentry, Architects, Upholsterers, and others who require WOOD CARVINGS executed.—With a view of affording greater facility to parties carrying on such work, the London Society of Journeymen Wood-Carvers will, upon application being made to them, furnish the names and addresses of persons competent to the execution of work in the various branches of this business, and who are at the time open to an Engagement in Town or Country.—All communications to be addressed to the Secretary, W. G. LOCK, 18, Metropolitan-buildings, St. Pancras, London.

PAPER-HANGINGS, CHEAPEST IN LONDON.—Builders, the Trade, and Country Dealers, may select from a Stock of 20,000 Pieces, of the newest designs, French and English. Bedrooms, 4d. per yard; Satins, 3d. per yard; Flocks, 6d. per yard. Patterns for approval sent in town or country; and Goods forwarded free of expense. A large discount allowed on taking a quantity. Panel decorations, flowers, or oaks remarkably cheap. Terms, cash. Established twenty years. W. CROSBY, 22, Lowther Arcade, Charing Cross.

PAPER-HANGINGS, MANUFACTURED UNDER HER MAJESTY'S ROYAL LETTERS PATENT.

E. T. ARCHER, 451, Oxford-street, solicits an inspection of the various DECORATIVE PAPERS, fitted up in panels on the walls of the extensive range of apartments, built expressly for that purpose; where also is kept an extensive stock of every variety of Paper-hangings, at the lowest possible price and of the best manufacture, in English and French Designs, by the best Artists; and where may be had a large assortment of French and other Continental Paper-hangings always on hand.—Builders and large Consumers are particularly invited to the above.—451, Oxford-street.

WHITE SUFFOLK and RED FACING BRICKS, of superior quality. Moulded Bricks to any pattern.—Apply to Mr. BENJAMIN GOUGH, 37, Newington-crescent, Newington-butts.
N.B. Cowley and Kent Bricks of every description, and Kentish Rag-stone direct from the Quarries.

BRICKS.—TO BUILDERS AND OTHERS.

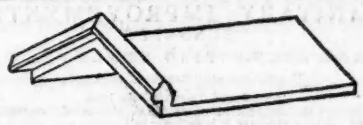
J. SMITH, of the Commercial-road Fields, Peckham, begs to call the attention of Builders and others, to his STOCK of very superior MALM BRICKS, comprising Seconds, Cutters, Paviours, and Pickings.
N.B. Several acres of very eligible BUILDING LAND to let, for a term of Ninety-nine years. Land-tax redeemed.

FIRE BRICKS.—WARD and HART, Honduras Wharf, Bankside, respectfully solicit the attention of Gas Companies, Builders, Engineers, Oven Builders, Shippers, and others to the fact that they have now completed their Stock of Stourbridge, Welsh, and Newcastle Fire Bricks, Lumps, and Tiles, of all sizes and shapes, which they are offering with every advantage to purchasers. Goods may be had from ships in the river at a great reduction. Fire Clays, Loams, Dutch Clinkers, Stock Bricks, Windsor Bricks, Oven Tiles, Pan, Plain, Ridge, and Paving ditto, Moulding Sand, House Sand (red and white), River Sand, Ballast, Lime, Cement, Malt and Corn-drying Kiln Tiles, now in such general use for malting, &c. &c., Chimney-pots, Drain Pipes, Tiles, &c. &c. Goods made to pattern at the shortest notice. Sanitary Pipes of every description. Country orders executed with dispatch. Country Builders will find this the cheapest market for the above.

WORCESTER ENCAUSTIC TILE WORKS.—The Proprietors, who are retiring from Business, are enabled to offer their STOCK of TILES at a very Reduced Rate. Ornamental Pavements of the best description, at 1*s*. 2*d*. per square foot; "Seconds," at 5½*d*.—N.B. These Tiles being manufactured in exact imitation of the best ancient specimens, are more suitable for the restoration of ancient Churches and Buildings than any others of modern make; and the present opportunity affords Architects and others the means of adopting a very beautiful decoration at the ordinary cost of stone. Arrangements have been made for any future "matchings" that may be required.—Specimens may be seen in London, at Messrs. GREIVE and GRELLIER'S Marble Wharf, Belvidere road, Waterloo-bridge; and in the country, at the Works, Palace-row, Worcester.

TO BRICK AND TILE MAKERS.

THE AINSLIE BRICK and TILE MACHINE COMPANY (James Smith, Esq., of Deanston, Chairman) invite attention to their improved Brick and Tile Machines, which are to be seen at work at Alperton, and at the Company's office, 193A, Piccadilly, from Ten a.m., to Five p.m. Mr. Robert Scrivener, who has been appointed manager in the room of Mr. John Ainslie, will show the machines at the works at Alperton, which is within a mile of the Sudbury station of the London and North-Western Railway, and two miles of the Ealing station of the Great Western Railway; also at the Polytechnic Institution, Regent-street, London.—All communications to be addressed to Mr. WILLIAM GORDON, Secretary, at the office of the Company, London, 193A, Piccadilly.—March 1, 1847. These machines may also be seen at Mr. Slight's, Leith-walk, Edinburgh; Mr. Robert Boyle's, Ayr; Mr. Lawrence Hill's, 135, Buchanan-street, Glasgow; Mr. Robert Charles', Mill-hill, Leeds; Messrs. Penny and Finch's Penkridge, Staffordshire; Messrs. Drummond and Son's, Dublin; and Mr. John Connor, Newton Lindvady, County Derry.



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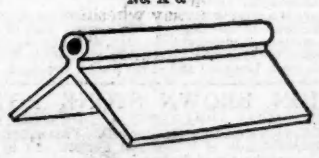

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Wings, 6½ to 7 inches.
Rolled in London, 6½d., and at Tunstall, 5½d. per foot.
Rebated in ditto, 6d., and at ditto, 5d. ditto.
Plain in ditto, 5½d., and at ditto, 4d. ditto.

ILLUSTRATED TRADE LISTS GRATIS, containing much information useful for reference, also Testimonials respecting a MATERIAL which, when well wrought, is probably superior to every other for drains or conduits, for ridges, hips, valleys, and every part of roofs, for plain or chequered paving, for erecting sea-walls and other strong works, &c. To be had GENUINE of THOMAS PEAKE (proprietor of "Peake's Terro-Metallic"), No. 4 Wharf, City-road Basin, London; also, at the Tileries, Tunstall, Staffordshire. Articles would be supplied to any extent, and dispatched to any part of the world. The lists contain prices by measure as well as by number. Letters to be prepaid, and to say if the London or Staffordshire prices are wanted.

J. and J. HARTILL'S STOVE, FENDER, FIRE-IRON, and GENERAL FURNISHING IRONMONGERY WAREHOUSE, 89, WEST SMITHFIELD.
Register Stoves, 6*d*. per inch.
Elliptic Stoves, 2½*d*. per inch.
Cottage Range, with Oven and Boiler, 3 ft., 35*s*.
Self-acting Range, with Oven and Boiler, bright fittings, 3 ft. 6 in., 3*l*. 10*s*.
Drawing-Room Fenders 14*s*. each, usually sold at 1*l*. 1*s*.
All Goods Warranted.
J. and J. Hartill are Ironfounders, Fender and Fire-Iron Manufacturers at Dudley. Established 1823.

OLD-ESTABLISHED WHOLESALE IRONMONGERY WAREHOUSE, Kitchen-range, and Stove-grate Manufactory, 18, Cross-street, Walworth.

JOHN GRICE most respectfully solicits the attention of Architects, Builders, and Carpenters, to his Stock of Black and Bright Stoves, Kitchen Ranges, &c., &c.
Black Registers, from 6½*d*. per in. and upwards.
Bright ditto with Black and Bright Bars, 2*l*. 10*s*. and upwards.
Self-acting Kitchen Ranges, with Oven and Back Boiler, Wrought Bars, Fittings Bright:—

3 ft.	3 ft. 6 in.	4 ft.
2*l*. 3*s*.	2*l*. 14*s*.	4*l*. 4*s*.

All articles made on the premises and warranted, and delivered free of expense within five miles of London. Bell-hanging in superior style, hung in secret, 9*s*. per pull.

TO ARCHITECTS, BUILDERS, &c.

R. HENLY and Co., WHOLESALE IRONMONGERS, and Manufacturers of KITCHEN-RANGES, STOVES, &c., 196, Blackfriars-road, and 117, Union-street, Borough.
Strong Self-acting Kitchen Ranges, with Back Boiler and Oven, and Wrought Bars:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£3. 6*s*.	£3. 13*s*.	£3. 16*s*.	£4.	£4. 10*s*.

Henly's Patent Improved, with back Boiler and Wrought Iron Oven:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£5.	£5. 15*s*.	£6. 5*s*.	£6. 10*s*.	£7.

Best Register Stoves, at 7d., 8d., and 9d. per inch.
Do. Elliptic do., at 3½d., and 4d. do.
Manufacturer of WOLFASTON'S PATENT REGISTER STOVES, a certain cure for SMOKY CHIMNEYS, and effecting a great saving in fuel. To be seen in use daily.
Orders from the Country, accompanied with a remittance or reference, will meet with prompt attention.

TO BUILDERS and CARPENTERS.—Elliptic Stoves, double backs, 3*d*. per inch. Registers, 6½*d*., 7*d*., 8*d*. per inch.
Cottage Ranges, with Oven and Back Boiler, 3 ft., 33*s*.; 3 ft. 3 42*s*.; 3 ft. 4, 44*s*.; 3 ft. 6, 46*s*.
Self-acting Ranges, with Circular Oven and Back Boiler, best Wrought Bars and Bright Fittings,

3 ft., £3. 3*s*.	3 ft. 6, £3. 12*s*. 6*d*.	4 ft., £4.

Best Patent Cut Clasp.

5*d*.	6*d*.	8*d*.	11*d*.	1*s*. 4*d*.	1*s*. 10*d*. per 1,000.
3*d*.	4*d*.	6*d*.	8*d*.	10*d*.	20*d*.

Best Sheet Floor Brads 14*s*. per cwt.
Best Town Glue 38*s*. Do. Scotch, 52*s*. per cwt.
Best Patent Sash Line.

4*s*. 3*d*.	5*s*.	6*s*. 6*d*.	7*s*. 6*d*.	10*s*.	12*s*. per gross.
1	2	3	4	5	6

At F. R. WILLIAMSON'S IRONMONGERY and STOVE WAREHOUSE, 35, Chiswell-street, Finsbury-square.
Lists of Prices had on application at the Warehouse, or by letter pre-paid, inclosing postage stamp.
N.B Warehouse closes at Seven o'clock.

RAIN-WATER PIPES, Heads, Shoes, and Elbows, Half-round and O G Gutters, Sash Weights, Railing Bars, Sink and Stable Traps and Gratings, Air Bricks, Coal Plates, &c.; Gas and Water Pipes from 1¼ inch. to 12 in. in diameter, with Bends, Branches, Syphons, and Lamp Columns; also Hot-water Pipes, with all the usual connections. A large Stock of the above Castings at JONES'S Iron Bridge Wharf, No. 6, Bankside, Southwark.

LAP WELDED IRON TUBES.—W. H. RICHARDSON, Jun., and Co., MANUFACTURERS of every description of WROUGHT IRON TUBES for Locomotive and Marine Boilers, Gas, Steam, and other purposes.
PATENT TUBE WORKS, DARLASTON, STAFFORDSHIRE

IRON FOUNDRY, 9, Brick-lane, Old-street, St. Luke's.—J. J. JONES having made great additions to his STOCK OF PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns, Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Fly and other Wheels, Wheel Plates, &c.
BAKER'S OVEN WORK, Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

IRON FOUNDRY,
163, DRURY-LANE, and CHARLES-STREET, DRURY-LANE.
JOSEPH GLOVER,
Solicits the attention of the Trade to his extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, consisting of those for every purpose, either structural or ornamental.
Wheel Pinion and Steam-Engine Patterns; Range Stove and Hot Plate Metal.
A stock of Rain-Water Pipes, Plain and O G Guttering, Air Bricks, Sash Weights, &c. &c.
A very superior description of Soot Door, particularly suitable for internal work, being perfectly secure, and not unsightly.
ESTIMATES given for IRON ROOFING and every description of Ironwork, complete to specification, and the work executed with every attention to quality and dispatch.
GLOVER'S FOUNDRY,
163, DRURY-LANE, and CHARLES-STREET.

LIGHTNING CONDUCTORS for BUILDINGS.—SMITH'S PATENT COPPER WIRE ROPE is being daily employed for the protection of CHURCHES and other buildings from the effects of thunder-storms. It possesses important advantages over other forms of conductors. References can be given where it has been applied for some time past to CHURCHES, PUBLIC and PRIVATE BUILDINGS, &c. &c. Its general adoption in the Naval and Mercantile Marine of this and other countries is the strongest possible EVIDENCE of its EFFICIENCY, &c.
SMITH and ENGLISH beg the attention of those engaged in building to their IMPROVED PATENT PANELLED and REVOLVING IRON SHUTTERS.—Also, the Patent Weather-tight Fastening and Cill Bar, for French Casements, which are so much admired for their security, simplicity, cheapness, and efficiency. Of the merits of their
Patent Double and Single Action Door Springs,
Improved Flooring Cramps,
Patent Wire Sash Lines, &c. &c.,
little need be said, as they are pretty generally known and appreciated.
Manufactory for Iron Suspension, Sliding, and other Doors, Strong Rooms, Plain and Ornamental Palisading, Gates, and Columns.—Also, Metal Sashes, Shop-fronts, Stall-board Plates, Brass, Butt, and other Hinges. Buildings heated upon a new, safe, and superior plan.
Estimates given for every description of Metal-work.
SMITH and ENGLISH, 69, Princes-street, Leicester-square, London.

PREPARED FLOORING BOARDS.

ALWAYS ON SALE, a Large Assortment of DRY PREPARED FLOORING BOARDS and MATCHED BOARDING of all sorts, planed to a parallel width and thickness, from ¼ inch to 1¼ inch thick. TIMBER, DEALS, OAK PLANKS, SCANTLINGS, SASH SILLS, &c.

Apply at W. CLEAVE'S Timber Yard, Wilton-road, Pimlico, late of Great Smith-street, Westminster.—Mouldings prepared by Machinery.

A REDUCTION in the PRICE of FLOOR BOARDS.—ALFRED ROSLING begs to inform the Trade and Consumers generally, that he has REDUCED the PRICE, and keeps constantly in stock a large and very general assortment of Prepared Floor Boards and Matched Boarding, laned to a parallel breadth and thickness, and fit for immediate use; also a variety of machine-prepared Mouldings, which are finished with great accuracy and attention to quality of workmanship.—Southwark Bridge Wharf, Bankside, and Old Barge Wharf, Upper Ground-street, Blackfriars.

T. ADAMS (late S. DARE), MAHOGANY and TIMBER MERCHANT, Bermondsey New Road, near the Bricklayers' Arms. SEASONED FLOORING, MATCH-BOARDING FIT FOR IMMEDIATE USE, and MOULDINGS prepared by machinery, Cut Deals and Scantling of every dimension, Mahogany, Cedar, Rosewood, Wainscot, Elm, Beech, Oak, &c., in planks, boards, veneers, and logs; Pantile, Oak, and Fir Laths; Wheelwrights' Goods. All sawn and prepared goods delivered free of expense (except timber). Sawing charged at mill prices. Very extensive Drying Sheds.

MUIRS PATENT PLANING MACHINE.

SAW MILLS, GILLINGHAM-STREET, PIMLICO.

TIMBER of any size, PLANK, DEALS, and BATTENS, &c., Sawn on the most approved principle. Boards, &c., Prepared, Matched, and Grooved, by Muir's Patent Machinery. The Mills have all the advantages of navigation and water-carriage, being connected with the Thames by the Grosvenor Canal. Goods fetched from the docks and carted home free of charge.

Address to HENRY SOUTHAM, Saw Mills, Gillingham-street, Pimlico.

N.B. Estimates given for Sawing and Planing.

WOOD THOROUGHLY SEASONED in DAYS instead of YEARS, by DAVISON and SYMINGTON'S PATENTED PROCESS, at the Patent Desiccating Company's Establishment (for Seasoning, Sawing, and Planing Wood), at the Grand Surrey Mills, immediately adjoining the Commercial and East Country Docks, Rotherhithe. The new process ensures the entire removal of moisture, hardens the gums, prevents further shrinkage, and strengthens the fibre.—For scale of prices, or license to work the patent, or any further information, address, post-paid, or apply to W. H. TANQUERAY, Secretary.

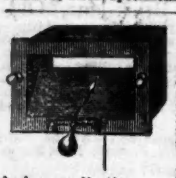
The Patent Desiccating Company's Offices are REMOVED from 29, New Broad-street to No. 41, GRACECHURCH-STREET, CITY.

PATENT HANDRAILS WITHOUT HEADING JOINTS, now so well known and justly appreciated, being patronized by the most eminent architects.—J. MELVILLE, informs Architects, Builders, and the trade in general, that having recently erected an improved steam apparatus, which, by causing a saving of fuel, and otherwise giving greater facility to the execution of the work, he is enabled to make a reduction of 10 per cent. on his former prices. Patterns and prices forwarded to any part of the country (on a reference being given), and Architects or Builders waited on in London.—64, Johnstreet, Fitzroy-square, London.

By Her Majesty's Royal Letters Patent.

GLASS VENTILATORS FOR WINDOWS.

BAILLIE'S Patent Transparent Slide Valve VENTILATORS, supplied at a reduction of 40 per cent. from the original Tariff. Their extensive and successful application to public offices, bed-rooms, and the cure of smokey chimneys, prove their great utility. Coloured Glass of every tint at wholesale prices.—Designs and estimates for church and ornamental windows forwarded on application to EDWARD BAILLIE, Glass Painter, Stainer, and Embosser, 12a, Cumberland Market, Regent's-park, London, where specimens are to be seen.



DR. ARNOTT'S CHIMNEY VENTILATOR.

F. EDWARDS, Stove Maker to her Majesty, 20, Poland-street, Oxford-street, begs to call the attention of Architects, Builders, Gas-fitters and the Public, to the truly invaluable advantages to be derived from the use of Dr. Arnott's Valve for the Ventilation of Rooms of every description.

Prices from 7s. 6d. to 20s. each. A prospectus, containing full particulars, to be had on application.

SMOKY CHIMNEYS—NO CURE, NO PAY.

Twenty-five years' extensive experience in all the branches of a stove manufacturing business, and the cure of smoky chimneys of every description, fully justifies F. E. in stating that he can undertake the cure of smoky chimneys on the above equitable terms.

WILSON and Co.'s PATENT VENTILATING CHIMNEY-POT, for the Cure of Smoky Chimneys, has been tested extensively throughout the Kingdom for the last three years, and has proved to be an effectual remedy.

The Patent Pots cannot corrode or get out of order, and can be effectually swept by the sweep's machine.

J. W. and Co. had the honour of fixing upwards of fifty of the Patent Ventilating Chimney Pots, in artificial Stone Cement, on the chimneys of Buckingham Palace; since which a number have been fixed at Windsor Castle.

The Patent Pots have proved to be the most effectual invention ever yet discovered, and also unrivalled for their ornamental appearance; they are manufactured of artificial Stone Cement, Iron, or Zinc.

The Trade supplied with them at the Manufactory,

VALE PLACE, HAMMERSMITH, MIDDLESEX.

Inquiries from the Country to be addressed to Messrs. Wilson and Co., at their Manufactory, as above. Prices and prospectuses forwarded by return of post.

N.B. Licenses granted to Manufacturers.

ARCHITECTURAL ENRICHMENTS.

BIELEFELD'S IMPROVED PAPIER MACHE, which has been almost universally adopted for architectural decoration, has been patronized by her Majesty, by the Honourable Commissioners of Board of Works, by the highest of the nobility and gentry, and by the most eminent architects of the day. It has been used at the royal palaces, at the present House of Lords, at Dublin Castle, at Drayton Manor, the new Conservative Club House, Grocers' Hall, &c., also at the British Museum and Pantheon Bazaar, where it has been extensively used for some years, and an inspection will sufficiently establish its superiority over every other kind of composition, both for beauty and durability. Designs prepared for the decoration of ceilings, panelling of walls, &c. A volume of enrichments, containing more than 1,000 designs of the papier maché ornaments, with a tariff, price £1.—Works, 15, Wellington Street North, Strand.

WEST of LONDON and WESTMINSTER CEMETERY, Old Brompton and Fulham-road, 2 miles only from Piccadilly. Consecrated by the Bishop of London in 1840. The public are invited to inspect the Cemetery, which is open daily, for interments, from Eight o'clock in the morning until sunset. Tables of charges, and other particulars, may be obtained at the office, 153, Piccadilly.

A portion of the ground is unconsecrated.

JOHN H. BUDDICK, Secretary.

CHEAP ORNAMENTAL GLASS.—I beg to inform my friends and the public, that I have now completed a new ENGINE, and, owing to the facility with which I can execute orders, I am enabled to reduce my former prices considerably. The prices are now from ONE SHILLING PER FOOT SUP., and borders from SIXPENCE PER FOOT RUN. A large quantity of the cheapest patterns always in stock. Embossing and painted work on the most moderate terms.—CHARLES LONG, No. 1, King-street, Baker-street, Portman-square.—Cash only.

WINDOW GLASS.—THOMAS MILLINGTON begs to inform the Trade and Consumers that he has a large Stock of Sheet-Glass on hand, which he will supply in 200-feet cases, delivered free in London for 42s. 6d. per case, or cut to size, 3d. per foot.—Address, 87, Bishopsgate-street-without.

WINDOW-GLASS, VARNISH-COLOURS, and PLUMBERS' BRASS-WORK.

THOS. MILLINGTON, 87, Bishopsgate-street Without, London, begs to inform the Trade, and consumers generally, that he is supplying the above articles of the best materials and upon the lowest terms for cash.

CROWN, SHEET, and PLATE GLASS, in any quantity; VARNISH; fine Oak or Wainscot, 10s; Carriage, 12s. per gallon; White Lead, 27s., and Colours and Brushes; Water Closets complete, 30s.; Lifting Pumps and Cocks of every description.

Milk Pans; Propagating, Bee, and Cucumber Glasses; Paperhangings from 1s. per piece upwards, of very superior description.

GREAT REDUCTION IN THE PRICE OF PLATE-GLASS.

THE UNION PLATE-GLASS COMPANY.—Pocket-nook, St. Helen's; 99, Hatton-garden, London; No. 13, York-street, Mosley-street, Manchester; and 26, North John-street, Liverpool; inform Builders and the public generally, that they are now selling ordinary glazing sizes of plate glass from 2s. to 3s. per foot, and smaller plates suitable for cottages, greenhouses, and conservatories, at 6d. to 1s. per foot.—RICHARD YATES, Secretary.

STAINED GLASS.—To the Clergy and Architects.—Mr. WILMSHURST begs to inform the Clergy, Architects, &c., that he has opened a room containing a variety of specimens of PAINTED GLASS, suitable for Gothic Church decoration, viz., subjects, single figures of the Evangelists, and other Saints (some having canopies and pedestals), with numerous emblems; and examples of Windows, suitable for churches of various periods of architecture; also, specimens of Illuminated Tablets.

Mr. WILMSHURST solicits the inspection of the above by all interested in church embellishment at his residence, No. 13, Foley-place, Langham-place.

TO THE NOBILITY, CLERGY, GENTRY, ARCHITECTS, &c.

ORNAMENTAL, EMBLAZONED, and FIGURED STAINED GLASS, and ENCAUSTIC TILES, by new processes.—The Advertiser is prepared to execute orders of any extent, and patterns, whether in heraldry, flowers, figures, landscapes, or monograms, in colours of the most beautiful and desirable brilliance, and indestructible by the atmosphere, so as to meet the wishes of whoever supplies him with the design for execution, and peculiarly adapted for ecclesiastical edifices and baronial halls, &c. In not being restricted to size of object, nor to diversity of arrangement, and prepared to meet any competition, the Encaustic Tiles are specially adapted for portions of apartments, from the surbase to the floor, also for baths, dairies, fire-places, shop-windows, &c.—presenting to the eye the most pleasing proof of cleanliness and decorum, and not affected by either air or moisture. The ornamental, figured, enamelled patterns of Glass, at 1s. per square foot; and any private design will be executed at this price, when the order is not for less than 100 feet. The Tiles are at an equally low price per square yard. Orders will receive the most prompt attention, and be speedily completed, for cash only.—GEORGE WALKER, Paradise-street, Tunstall, Staffordshire Potteries.

CHAS. WM. WATERLOW,

MANUFACTURER of Sashes and Frames, and Joiner to the Trade, 121, Bunhill-row, Finsbury-square.—Well-seasoned materials, superior workmanship, lowest prices.—Upwards of 400 DOORS, and a large variety of Sashes and Frames, always on sale. Glazed goods securely packed for the country. Steam-struck Mouldings in any quantity.—N.B. This Establishment is worth the notice of all engaged in building.

LAMBERT'S PATENT FLEXIBLE DIAPHRAGM HIGH-PRESSURE WATER-TAPS.—This application of the Vulcanized Caoutchouc (prepared expressly for these valves, with layers of canvas amalgamated therewith), having now stood the test of two years' trial with perfect success, the Patentees beg to point out some of its many important advantages over the old plug and other taps and valves. First,—The security from leakage, let the pressure be ever so great. Its extreme durability, the parts in contact with the water being free from friction; the ease with which it is opened and closed; it never gets stiff or set fast for want of use, neither is it liable to injury by frost; they can be made in iron, and at a less cost than any other taps, and are exceedingly well adapted for ball or cistern valves, and in no instance have they been known to fail; many hundreds have been fixed, to which reference can be given with the greatest confidence.

THOMAS LAMBERT and SON, Patentees and Sole Manufacturers, 30, New Cut, near the Blackfriars-road, London.

SANITARY IMPROVEMENTS.

BUNNETT'S

PATENT SELF-ACTING EFFLUVIA TRAP

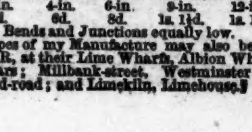
For Sewers and Drains of all kinds.

Registered January 5th, 1848.

A cheap, durable, and most effectual means of preventing the escape of noxious vapours, it is entirely self-acting and self-cleansing, cannot get out of order, and may be readily applied in all situations without altering the present gratings.

The above is a most important improvement on all contrivances of the kind, and is manufactured in various sizes to suit all purposes, specimens of which may be seen, and also working models, at the office of Messrs. BUNNETT and CORPE, Engineers, 26, Lombard-street, London: and at the works, Deptford, Kent.

UNION BROWN STONE POTTERY, CHEMICAL APPARATUS, and DRAIN-PIPE MANUFACTORY, 14, Vauxhall-walk, Lambeth. Patronised by Her Majesty's Commissioners of Woods and Forests, and by the Metropolitan Commissioners of Sewers.



WILLIAM NORTHEN, Inventor of Salt GLAZED BROWN STONE SOCKET DRAIN-PIPES, in every variety of shape, begs to call the attention of Architects, Surveyors, Contractors, and Others to the following list of prices:—

Straight Barrel Pipes, with Socket Joints, in 2-ft. Length					
2-in.	3-in.	4-in.	6-in.	9-in.	12-in. bore.
4d.	5d.	6d.	8d.	1s. 1½d.	1s. 10d. per foot

Bends and Junctions equally low.

N.B. Drain-pipes of my Manufacture may also be obtained of Messrs. ROSHER, at their Lime Wharfs, Albion Wharf, Holland-street, Blackfriars; Millbank-street, Westminster; Kingsland Basin, Kingsland-road; and Limekiln, Limehouse.

J. MASON begs to call the attention of the Nobility and Gentry to his superior Collection of Terrace Pieces, Garden and Pleasure Ground Vases, Flower Pots, Fountains, &c. &c. Also Architects, Surveyors, and Builders to a great variety of Perforated Ornaments, for Parapets, Balconies, Terraces, and Garden Walls. Capitals, Trusses, Consols, Chimney Shafts, and other Ornaments, &c. Coats of Arms finished in a superior manner, all at half the usual price.—25, Providence-row, Finsbury-square, from Albion Wharf, Blackfriars-bridge.

TO THE BUILDING PUBLIC.

FIRST-RATE ORNAMENTS in ROMAN and other CEMENTS, and PLASTER of PARIS, at reasonable prices, consisting of Vases, Balusters, Capitals, perforated Panellings, Cantilevers, Brackets, Trusses, Wreaths, Scrolls Masques, Heads, Figures, Friezes, Gothic and other Chimney-Shafts, Soffits, Bed-mouldS, Paterae, &c., &c., 36-inch Centre Flowers fixed complete, 24s. each, smaller in proportion. An assortment of Shop-front Trusses always ready for fixing.—JOHN HERBERT and SON, Modellers, &c., 43, Parker-street, Drury-lane.

PROTOXIDE PAINT, for Stucco Fronts, for Iron, Brickwork, and Wood. Manufactured only by CHARLES FRANCIS and SONS, Cement Works, Nine Elms.

TODD'S PATENT METALLIC PROTOXIDE PAINT, for Stucco Fronts, Brickwork, Iron, Wood, and every description of Painting. This Paint has been most severely tested for nearly four years, by men of great experience, and has been extensively used under the superintendence of Architects, Engineers, and Surveyors of the greatest eminence.—Orders to be addressed to Mr. B. TODD, Patentee, 23, Dean-street, Soho, London.

GREAVES'S BLUE LIAS LIME and LIAS CEMENT.—Messrs. RUTTY and VEREY'S, 2, South Wharf, Paddington Basin. Works at Stratford-on-Avon and Southam. GLAZED STONE WARE DRAIN PIPES on hand.

ATKINSON'S CEMENT.—WILLIAM WOOD, Jun., Manufacturer of Roman, Portland, and Bath Cement, Blue Lias Lime Works, CHURCH STREET, ROTHERHITHE, Sole Consignee for Atkinson's Cement.—Grey Stone Lime Depôt. Cement Chimney-pots of every pattern.

KEENE'S PATENT MARBLE CEMENT forms an exceedingly hard and indestructible Stucco, which may either be prepared for paint, or finished in imitation of stone, by the addition of Portland or other stone dust.

It is a cheap and efficient substitute in place of wood for skirting, architrave, and other mouldings, in its application for which purposes it checks the progress of Fire and the attacks of Vermin.

Patentees and sole Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster, and Seel-street, Liverpool.

PORTLAND CEMENT.—Testimonials received from all quarters prove this CEMENT to possess the rare property of withstanding the severest frost, and to be consequently superior to every other for hydraulic purposes—such as the Building and Lining of Reservoirs, Cisterns, Baths, Fishponds, &c. For External Plastering and Ornamental Castings, it requires neither Colour nor Paint; it never vegetates, and will carry from three to four times its own body of sand.

Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster.

PORTLAND CEMENT, solely Manufactured by W. ASPDIN, Son of the Patentee. This Cement has been proved, for upwards of twenty years in the Thames Tunnel, to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever, the climate resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall.

PATENT PORTLAND CEMENT.—To ENGINEERS, ARCHITECTS, SURVEYORS, and BUILDERS.—Messrs. ROBINS, ASPDIN, and Co., are preparing at their Wharf, Great Scotland-yard, Whitehall, a course of experiments to test the adhesive power and strength of their Portland Cement, as compared with Cements of every description, manufactured by any other parties, and for the satisfaction of the building trade, they hereby invite all Cement Manufacturers to compete with them, either at their Wharf, or any other place to be agreed upon, pledging themselves to establish the great superiority of their cement over all others. R., A., and Co., will announce in "The Builder" and other papers, the time of trial to afford the opportunity of Engineers, Architects, Surveyors, and Builders being present thereat.

MARTIN'S FIRE-PROOF AND ORNAMENTAL CEMENT.

CAUTION.—Messrs. STEVENS and SON Patentees, beg to caution their friends and the trade generally against confounding this invaluable Cement with others, erroneously said to be of the same description. S. and S. pledge themselves that MARTIN'S CEMENT is totally dissimilar in composition and manufacture from every other, and being a neutral compound, is not only free from chemical agency upon any substance with which it may come in contact, but completely resists the action of the strongest acids. They feel it a duty to direct attention to the following properties, which it exclusively possesses:—

1. It rapidly acquires the hardness of stone.
2. Unlike other internal cements, its hardness is uniform throughout its entire thickness.
3. Its surface (which may be made equal to that of the finest marble) NEVER THROWS OUT ANY SALT, and will receive paint in four days, without peeling, when put upon dry work.

It is peculiarly adapted as an internal stucco for walls, skirtings, architraves, mouldings, and enrichments of all kinds, to all of which purposes it has been extensively applied by Mr. Thomas Cubitt, on the Grosvenor estate, &c.

For the above purposes, it possesses great advantages over woods, being more economical and durable, resisting fire, damp, and vermin.

For the floors of halls and fire-proof warehouses, its lightness, durability, and uniform surface give it an immense advantage over stone, being, at the same time, much more economical. The most satisfactory references can be given. To be had of the Patentees, Plaster of Paris and Cement Manufacturers, 186, DRURY LANE.

Agent for Liverpool and Manchester, Mr. R. PART, 28, Canning-place, Liverpool.

BOARD'S PORTLAND, BATH, and IMPROVED ROMAN CEMENT, Dunball, near Bridgwater.—The Proprietor of these Works begs to inform the public that he is now enabled to supply them with an unlimited quantity of the above Cements, and that the Bath and Portland will be found to resemble these celebrated stones both in colour and durability. They are recommended as being superior to all others, for the following reasons:—Being made of Inland Stone (and not dredged from the sea as stone for Roman is), they are not impregnated with salt, therefore never vegetate or turn green (a fault so generally complained of with Roman), they take a much larger quantity of sand than other Cement, never crack, blister, or peel off, and will be found even preferable to stone. They are perfectly Hydraulic, and will set under water in a few minutes; as an external Stucco they are impervious to all kinds of water, and not affected by frost or heat; they improve both in texture and durability, and require neither paint nor colour to make them resemble the best Bath and Portland stone, no other mixture being required than common sand. When used as an internal Stucco for walls, staircases, passages, &c., the Bath and Portland Cements may (if required) be trowelled up to a face almost equal to marble, or may be painted or papered on in a few days. The IMPROVED ROMAN CEMENT is made of the same kind of material, and will be found to possess all the qualities of Bath and Portland (except that of colour); it is cheaper, and in every respect better, than any previously offered to the public, and only requires one trial to be appreciated.

A stock of those Cements, as well as Blue Lias Lime ground for concrete, always on hand, which may be had at BOARD'S Depot Stone-yard, Paddington Station, and of the following Agents—viz., Mr. R. Creft, Surrey-street, Kent-square, Liverpool; Mr. Baker, 78, Digbeth, Birmingham; Mr. Furze, Hotwells-road, Bristol; Messrs. Tothill and Co., Temple Backs, Bristol; Mr. W. Davey, Quay, Bath; Mr. Grimsly, Oxford; Messrs. Clarkes, Reading; Mr. Thos. George, Windsor; Mr. Hurniman, Taunton; Mr. Tuckett, Exeter; Messrs. Browne's and Co., Bridgwater; Messrs. Southam and Evans, Gloucester.